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NOV DEC 1975
SIXTY CENTS



OUTDOORS



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the cover

Montanans—and especially MO readers—generally accept hunting as valid recreation. However, many Americans consider it barbaric, bloody, inhumane and, in general, unneeded. And they're working to abolish the sport. Robert E. LeResche treats this difficult and emotional issue in his excellent article on page 38. Front cover by Bill McRae and back cover by Jon Cates.

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POSTMASTER Montana Outdoors is entered as second class mail in Helena, MT 59601. Additional entry in Butte, MT 59701.

a livable environment for WILDLIFE is a quality environment for MAN



RETREAT FROM LIBBY

The conception, birth and growth of the Libby Dam project has been an affair that practically spanned the careers of some of the individuals involved. Before all of the ends are tied together, it probably will. Through all these years, our department has made a multitude of suggestions, recommendations and proposals to avoid, ease or compensate for damage being done to the habitat that supported the fish and wildlife populations of the Kootenai-Fisher River country.

At times in this long process of planning and construction, we cried out in anger when excessive and needless loss was suffered by fish and wildlife. Some of you might recall our outburst when the Fisher River was mauled to accommodate railroad relocations (May 1967).

At other times, we instituted last-ditch maneuvering, attempting to save habitat planned for conversion to other purposes. One such effort was our attempt to prevent Highway 37 from going along the east shore of the reservoir through important big game winter ranges (January 1969). Typically, we lost in this effort and almost symbolically, three days after the road was opened, the first bighorn sheep was struck and killed by an automobile.

These are but a few examples and in this issue of *Montana Outdoors*, Bruce May discusses the fishery implications in greater detail. (See page 6.) On the other side of the coin, the Corps of Engineers has funded numerous studies into ways of mitigating losses and together with Montana's governor and congressional delegation, they are working toward mitigation of some fish and wildlife losses by building a fish hatchery and securing money for game range acquisition, a process perpetually frustrated by Presidential vetoes, Office of Management and Budget withholdings and narrow interpretation by the Corps of Engineers of legislative language.

The important point relearned from the whole Libby process, however, is that we have really found no way to fully compensate for the fish and wildlife losses caused by the construction of Libby Dam and its associated facilities. Studies in many cases simply verify our original reasons for concern. Fish hatchery operations at best commit us to a never-ending practice nature had previously provided. Game range acquisition funds, shrinking annually as land prices escalate, can never acquire a new Kootenai valley. The conclusion that is inescapable is that fish and wildlife populations as we have come to know them in Montana cannot accommodate projects the magnitude of Libby without coming out losers. In reality we are simply teaching ourselves once again that there is "no such thing as a free lunch," and to "have your cake and eat it too" is just a myth.

Libby is now a fact of life. We will work diligently putting together the final chapters of its story, hopefully build a hatchery and acquire some game range as partial mitigation for the fish and wildlife losses sustained by Montana for the Libby project. Fish and Game interests do not stand alone at the wailing wall. Lincoln County commissioners are now unhappy with the dam, which they once welcomed. They say it has eroded the county's tax base, will provide poor recreation facilities and will hurt fish and wildlife resources. State Sen. Joe Roberts (D-Libby) says he thinks most area residents resent the boom and bust cycle that the dam construction has caused. Roberts told us that when Libby Dam was first proposed, the local people felt that whatever the federal government wanted, it could have. "Our attitudes have changed about that now," he said.

The question really is, "When will we ever learn?" After Libby—or after High Cow Creek on the Missouri, Allenspur on the Yellowstone, Glacier View on the North Fork of the Flathead, Spruce Park on the Middle Fork of the Flathead or Castle Reef on the Sun River? Once again it is up to all of us to determine whether this time we will learn from history, or destine ourselves to repeat it. 🐾

Wes Woodgerd, Director
Department of Fish and Game

our endangered species:

The Whooping Crane

by Dennis Flath

STANDING well over four feet with a wing span of nearly eight feet, the whooping crane (*Grus americana*) is one of North America's grandest and most spectacular birds.

The brilliance of its snow-white plumage sharply contrasts with its jet-black wing tips. The skin of the forehead is bare, except for a few black hair-like feathers, and appears deep red. The brilliantly clear "ker-loo, ker-lee-oo" whoop, for which the bird is named, can be heard for great distances under optimum conditions.

The fabled migrations of the whooping crane often carry this extremely rare bird across portions of eastern Montana. And all along the 2,500-mile route, from Canada to Texas, hopeful observers watch for the sight and sound of the whooping crane.

This tall and stately waterfowl is an old-timer among North American birds and remains have been found among Pleistocene (25,000-1,000,000 years ago) deposits in nine states. Water birds were abundant during the Pleistocene and represented nearly half

of all bird species found in the fossil record of that time. Today, only about 10% of all bird species are water birds.

With the coming and going of glaciers and the accompanying changes in climate, the ecology of the North American continent changed dramatically. Many forms of Pleistocene wildlife simply couldn't survive in a new and changing environment. The natural process of extinction eliminated these and they are known only from fossil remains. Others, such as the sandhill crane, continued to thrive rather well. The whooper represents a compromise between these two extremes—it survived catastrophic ecological changes, but only in token numbers.

The whooper continues to spend nearly all of its life in marshes. In fact, on the Texas gulf coast where whoopers spend the winter, they are seldom seen more than three feet above sea level. Sandhill cranes are rarely seen below that elevation.

Even during historic times, the whooping crane was never abundant. Early references to flocks of

"thousands" are now known to have been in error.

At one time, many persons also erroneously thought that brown cranes were young whoopers and white cranes were adults. It's true that adult whoopers are white, but immature whoopers are reddish-brown. Sandhill adults are gray and the immatures are brown.

Even though already scarce, a marked decline in numbers of whooping cranes took place during the 19th century. This decline was closely tied to the shrinking availability of suitable breeding habitat. Marshes at the southern end of Lake Michigan where whoopers once bred are now buried under the sprawling city of Chicago. Other marshes in Iowa, Minnesota, North Dakota and the prairie provinces of Canada (Alberta, Saskatchewan and Manitoba) have been drained and pressed into agricultural production or subdivided for summer homes.

Even peripheral areas in Canada no longer provide the vast isolation these creatures require. The only known breeding ground

continued



Whooping cranes at Aransas National Wildlife Refuge in Texas. photo by Marty Stouffer

As early as 1912, it was prophesied that the whooping crane was "doomed to extinction." By 1920, the species numbered no more than 50 birds, and a 1923 article in *The Saturday Evening Post* announced that "the Whooping Crane, perhaps the most majestic bird of all our feathered hosts, has traveled the long trail into oblivion." These assessments could have been correct except for the efforts of many concerned individuals and groups.

Map of the United States showing the migration route of the Great Lakes Sturgeon. A dashed line connects a 'Breeding area along Sass River' in the Pacific Northwest to a 'Wintering area at Aransas' in Texas. A shaded area in the Great Lakes region represents the species' range.

As national concern and interest focused on the plight of whooping cranes, a division occurred among those trying to save them. Aviculturists felt the only way to insure survival of the species was to capture the entire flock on the wintering grounds and maintain them in captivity. This would "protect" the birds from natural calamity and the guns of careless hunters. On the other hand, many conservationists felt that such a measure would be equivalent to extinction, since the forces of natural selection would no longer be operable, migratory instincts would be lost and food habits would change. In short, many of the inherent behavioral characteristics that make a whooping

Fortunately, plans to capture the entire flock were never approved or undertaken. If they had been, we would no longer have the whooper as a wild bird. The species would be only another oddity, stuffed away in a cage to be gazed at by curiosity seekers.

About December or January, the cranes begin to dance. The courtship dance of the whooping crane is a remarkable display of leaps, whirls and bows. In his book, "On the Trail of Vanishing Birds" (McGraw-Hill, New York, 1957), Robert Allen, an Audubon Society researcher, described the dance: "The male bird turns, walks off into the shallow water and stretches, raising his wings over his back, bending forward slightly as he does so. All at once he starts to dance, bowing toward the female, who now steps into the water beside him. Raising his satin-white wings with their jet-black tips to the fullest extent, he leaps high in the air, executing a half turn before landing. The female is now in the formalized attitude of a dancing crane, her neck arched, wings and plumes slightly raised, whole body stiff and yet graceful, like that of a ballerina."

“At the high point of their leap they throw their heads back, arching their necks so that the bills point skyward. The wings flap in a flowing, graceful rhythm. The legs are stiff and straight, so that they act like springs, sending the birds bouncing upward again and again like two people on pogo sticks. When they strike the ground at the end of a series of jumps, they run toward each other, nodding their heads very

gravely and flapping their huge wings. Then more leaps. Once the male, in a tremendous spring, jumped clear over the female, turning almost completely around as he was coming down.

"The climax is an exhausting series of bounding leaps, an almost frantic effort, and then, as suddenly as it began, the dance is over."

In April, whooping crane pairs and families begin to move restlessly around. Sometimes cranes rise in great spirals to altitudes of over 1,000 feet, seemingly in anticipation of the great migration to come. Then gradually, the number of cranes on the wintering area dwindles and the long journey to the nesting ground begins.

Discovery of the Sass River breeding area in 1954 added to existing knowledge about cranes. Here, observations by W. A. Fuller and N. S. Novakowski of the Canadian Wildlife Service revealed many facets of whooper life.

The habitat on the nesting grounds is generally marshy, interspersed with numerous shallow potholes. The potholes are separated by land areas supporting black spruce, tamarack and willows. These land areas are underlaid with several feet of sphagnum moss. The most prevalent emergent vegetation in the potholes is bulrush (*Scirpus validus*), the major component of whooping crane nests.

The whooping cranes arrive at the nesting area as breeding pairs and occupy well-defined territories with nests at least one mile apart. Whooping cranes usually mate for life, and mated pairs often return to the same nesting territory each year. The same nest may be used from year to year, but seldom for more than four consecutive years because nests settle into the marsh. When a nest is abandoned, often because of settling, whoopers usually build another nearby.

The nest is built in such a manner that the eggs lie in a rather precarious position when unattended. Both parents share

incubation, but the female takes most of the responsibility. Normally, two eggs are laid. When one egg hatches, the other is often abandoned or destroyed, although twins are sometimes hatched.

About one week after hatching, parents take the young from the nest. The parents are very solicitous and protective of the young birds, guarding them carefully as they feed from pothole to pothole. By September, the young are nearly adult size, but are distinguishable by their rusty coloration and lack of the red forehead patch. Parents continue to feed the young by offering morsels of food until they are six or seven months old.

Whoopers migrate in families rather than in a single flock, although some families may form loose associations with others during migration. Single birds and parents without young are the first to cover the 2,500 miles and arrive on the wintering area at Aransas National Wildlife Refuge. Adults with young arrive last, moving somewhat slower to accommodate the young birds. Periodic rest stops along the way have resulted in eight confirmed observations in Montana in the last eleven years. Five were made during fall and three in spring.

On wintering grounds, the cranes select and maintain family territories of at least 400 acres which contain all essentials for winter life. The territory is vigorously defended against intrusion by other cranes. Pairs with young are the most vociferous defenders and pre-empt the most desirable winter territories. Pairs without young come next, with widows, subadults and other singles receiving the least desirable territories.

Family life is generally orderly and calm until March or April when the prenuptial dances of the adults intensify. Suddenly the young bird becomes a source of annoyance to the parents and is repeatedly driven away and forced to fend for itself. This exile is not permanent, however, for the young crane rejoins its parents for the spring migration.

The whooping crane dwells primarily in marshes and spends much time wading in shallow water and probing the bottom ooze for morsels of food. On wintering areas, it feeds extensively on salt- and brackish-water invertebrates such as crabs, snails, marine worms and sea slugs. During summer, frogs, insects, insect larvae and freshwater mollusks form the mainstay of a whooper's diet. An occasional meal of pond-side berries may be taken as well as mice, shrews, bulbous roots of aquatic plants and snakes. Whoopers are quite omnivorous and not too fastidious in selecting food.

Along the migration route, whoopers often feed in grain fields. This habit has created conflict with farmers in some areas. In Saskatchewan, where grain crops are still standing during migration, these activities have often been viewed as depredations. Occasionally, migrating whoopers occupy upland sites frequented by sandhill cranes.

THE WHOOPERS STILL DANCE

Over the years, those directly concerned with whooping cranes have waited in anticipation as the birds returned to Aransas in the fall. How many would there be this year? Were there any young? Did all the adults successfully make the 5,000-mile round trip? What about the subadults? From a recorded low of 14 birds in 1938, the wild population increased to 47 birds in 1974. In addition, 23 whoopers are in captivity, 20 at the Patuxent Wildlife Research Center in Laurel, Md., 1 at the San Antonio Zoo and 2 at the New Orleans Zoo.

The book is not yet closed on the whooper. Our children's children may yet have an opportunity to hear the clarion "ker-loo" and watch the slow, methodical beat of a whooper's flight. Even though extinction is a natural phenomenon, prospects for continued survival of a representative population of whooping cranes are bright. It's good to know the whoopers still dance. 🐾





The Mitigation Myth

The real impact of Libby Dam on fisheries has finally surfaced.

by Bruce May

Many large rivers in Montana already have been impounded by dams and many others face such threats in the near future. Dams are built for a variety of reasons—flood control, power production and storage of water for domestic, agricultural and industrial users.

Whatever the reason, though, impoundment of a free-flowing river usually means replacing a quality, wild trout fishery with a sport fishery managed primarily with hatchery fish. Such was the fate of Montana's second largest river, the Kootenai, which flows out of British Columbia and through the northwestern corner of the state.

This article explores the effects of Libby Dam on the fishery, examines the resource "trade offs" which are unavoidable in such projects and reviews the mitigation efforts used to reduce damage to the fishery. The obvious lesson of the Libby project is that *mitigation cannot replace destroyed natural resources with something of equal or comparable value.*

Libby Dam impounded 90 miles of the Kootenai River in the United States and Canada. In addition, a reregulatory dam is planned to smooth out the river fluctuations resulting from Libby Dam's operation during periods when peak loads are needed.

Without the "rereg," the river would fluctuate as much as six feet in a matter of minutes when all eight generators are activated to meet peak power demands.

With construction of the reregulatory dam, over 100 miles of this once-emerald-green river will have been sacrificed on the altar of increased power production and shortsighted floodplain management. Before impoundment, the Kootenai River produced a year-round quality fishery for west-slope cutthroat, rainbow and Dolly Varden trout and mountain whitefish. The winter fishery for whitefish and trout was one of the best—if not *the* best—in Montana.

Lake Koocanusa (the reservoir created by Libby Dam) has a surface area of about 45,000 acres at full pool. The average annual drawdown for flood control and power production will lower the water level 120 feet and reduce the pool area to 18,400 acres. The maximum drawdown of 172 feet, which occurred in 1975, reduced the pool volume by 85%.

Water level fluctuations of this magnitude create many problems for fish, fishermen and fisheries managers trying to produce a satisfactory sport fishery. The reservoir drawdown (1) prevents establishment of aquatic insect and rooted aquatic plant populations in areas alternately flooded and desiccated, (2) concentrates fish which increases competition for food and space between game fish and rough fish, (3) results in fewer fish and fish food organisms in the reservoir (4) eliminates the winter fishery and (5) severely limits access to the remaining pool



(above) The Kootenai River before Libby Dam flooded it. F&G photo by Otis Robbins. (below) The Kootenai River near Young's Creek—now Lake Koocanusa—after Libby Dam. F&G photo by Bruce May. (lower right) A mountain whitefish killed by gas bubble disease. F&G photo by Bruce May

continued

for as long as five to six months.

Initially, filling a new reservoir creates a large, fertile body of water with abundant fish food called zooplankton. These tiny organisms feed primarily on single-celled green plants called phytoplankton. Phytoplankton form the base of the food chain in fluctuating reservoirs because the annual drawdown prevents establishment of aquatic insects. Fish present in the river before impoundment expand rapidly into this virtually competition-free environment where food is plentiful. In addition, new reservoirs are generally planted quite heavily with fingerling trout because they have good growth and survival in the new environment. The combination of wild fish and hatchery fish creates an excellent fishery for the first few years.

Before long, though, the honeymoon is over. Game fish growth and survival decline markedly and the age of the rough fish arrives.

Impoundment of a river produces good reproductive conditions for rough fish which scatter or broadcast their eggs over gravel and rocky bottoms. Suckers, squawfish and peamouth chubs find sexual paradises in the abundant spawning environment and reproduction is the order of the day.

On the other hand, a reservoir destroys the historic spawning grounds of trout and whitefish which require clean gravel and running water for successful reproduction. Libby Dam alone ruined spawning habitat for mountain whitefish and trout in 90 miles of the main Kootenai River and approximately 40-50 miles of tributaries.

ESTABLISHING A SPORT FISHERY

Now, let's examine the management tools used to produce a sport fishery in Lake Koocanusa. First, we selected a trout species for planting. This species, westslope cutthroat, could survive and compete in a fluctuating reservoir environment with many rough fish where the primary food was zooplankton.

The strain of westslope cutthroat inhabiting Hungry Horse Reservoir appeared best adapted

for Lake Koocanusa. This particular strain probably is the original Flathead Lake strain trapped in Hungry Horse Reservoir. Fishery biologists call it an "adfluvial" or "lake" strain. In other words, adults live in the lake and migrate considerable distances to spawn in tributary streams. After spawning, the surviving adults (about 50%) migrate back to the lake or reservoir.

After hatching, the fry live in the stream for two or three years before they migrate to the lake or reservoir. While in the stream, the juvenile cutthroat become imprinted—they are able to distinguish unique characteristics of their natal stream in much the same manner as salmon do.

The juvenile cutthroat range in size from four to eight inches when they immigrate to the reservoir and thus are large enough to compete successfully with dense populations of rough fish. The cutthroat feed heavily on zooplankton and grow rapidly the first year or two in the reservoir.

After two years, the juveniles have matured and range from 12-18 inches. Then they start the spawning migration. Westslope cutthroat have a strong homing instinct, so most return to spawn in the same stream from which they originated—thus completing the life cycle.

The cutthroat for Lake Koocanusa will come from two sources, (1) a mitigation hatchery and (2) natural reproduction from tributaries. The hatchery is needed to provide cutthroat trout for the reservoir because of insufficient natural reproduction caused by destruction of the historic spawning areas. The hatchery will also help mitigate other damages to the fishery caused by the Libby project.

The Corps of Engineers, who built Libby Dam, funded a project to enhance natural reproduction in suitable tributaries. The pilot study to establish self-sustaining spawning runs of westslope cutthroat began in 1970 on Young Creek, which enters the reservoir from the west, about three miles

south of the Canadian border. The management program consisted of four phases: (1) removal of potential barriers to fish, such as log jams and abandoned beaver dams, (2) reduction of resident fish populations in the stream to insure survival of planted fish, (3) annual imprint plants of subfingerling cutthroat until the runs are established and (4) evaluation of the survival, growth and migrations of the imprint plants and development of spawning runs.

Barrier removal and alteration for fish passage was completed at Young Creek in 1970. The fish population, a mixture of eastern brook trout and a nonmigratory strain of cutthroat, was nearly eliminated in the lower 11 miles of the stream using rotenone. Rotenone is a derivative of a South American plant which kills fish by interfering with their system of getting oxygen. It breaks down rapidly in the presence of oxygen and sunlight. It leaves no toxic residues. The first imprint plants were made in September 1970 and survival in the comparatively competition-free environment was excellent, averaging about 25%.

Since 1970, migration of cutthroat into and out of Young Creek has been monitored utilizing a combination upstream and downstream fish trap built by the Corps of Engineers. The downstream trap is generally operated during the peak of the outmigration, from April through August. The catch represents only a part of the outmigrants. In both 1973 and 1974, nearly 2,000 outmigrants or "smolts" were trapped and released downstream. The total number of outmigrants was estimated at over 3,000 fish in both years. Smolts are branded below the lateral line using a liquid nitrogen to cool the brand to -196 C. This distinctive mark enables biologists to determine the growth, survival and migration patterns for each year's group of fish.

Adults from the initial 1970 imprint plant first returned to spawn in 1974. Approximately 320 westslope cutthroat, ranging

in size from 11-17 inches, passed through the upstream trap. This was a good return, considering that many cutthroat were lost downstream in 1972 and 1973 during and after reservoir draw-down. Eventually, Young Creek should support a spawning run of 1,000-2,000 fish and produce 5,000-10,000 juvenile smolts annually.

Using techniques developed at Young Creek, five other tributaries with suitable habitat for westslope cutthroat were converted to the migratory cutthroat strain in 1972 and 1973. In addition, barriers were removed from 35 miles of tributary streams to enhance reproduction of Dolly Varden and cutthroat trout and mountain whitefish.

Natural reproduction of wild westslope cutthroat, rainbow and Dolly Varden trout and mountain whitefish from the tributaries should provide a significant part of the game fish for the reservoir.

Fisheries managers also hope to reduce competition between rough fish and game fish in reservoirs and lakes. However, control of rough fish in a reservoir as large as Lake Koocanusa (45,000 surface acres at full pool) is not economically feasible. When rough fish cannot be controlled in a cold-water reservoir, fisheries managers fall back on stocking larger trout, at least five or six inches in length, to insure adequate survival. This helps reduce competition and predation, thereby insuring a higher survival rate than for fingerling trout. The study will determine the optimum stocking size as the reservoir ages.

GAME FISH DISTRIBUTION

Reducing loss of game fish over the dam is another goal of the reservoir management. A study to determine the year-round depth distribution and abundance of game fish is currently under way, using sonar. Vertical gill nets will be set to gather fish which will provide information on not only the depth but also the species present at these depths. Integration of the data from the sonar

and vertical gill nets should provide a good picture of game fish depth distribution. This information will be coordinated with operation of the multi-gated structures on Libby Dam to select depths from which water will be drawn for turbine operation to lessen fish mortality.

Intensive management of the tributaries as spawning and nursery areas for migratory game fish and annual plants of hatchery cutthroat should result in a satisfactory sport fishery in Lake Koocanusa—but at considerable expense. In contrast, the fishery in the Kootenai River before impoundment was based on natural reproduction with management primarily directed at preservation of habitat and water quality—at a much smaller expense.

ALTERED ENVIRONMENT

Impoundment of a river by a dam greatly alters the aquatic environment in the river for many miles below the dam. Libby Dam changed the water temperatures, flows, water quality, sediment loads, bedload movements, insect movements and fish migrations in the Kootenai River. These environmental alterations have already produced vast changes in the biota of the river below the dam. Researchers investigating the area below Libby Dam are now evaluating the effects of environmental changes on the fish populations and determining what management measures would best mitigate the damages.

Soon after impoundment of the river in April 1972, dense growths of algae (primarily *Ulothrix*) were noted on the river bottom for over 30 miles below the dam. The lack of high scouring spring flows, reduced natural turbidities and changes in temperature all combined to produce a suitable environment for algae growth. In turn, the algae growth greatly influenced the aquatic insect populations by plugging the interstices (spaces) in the gravels where larvae of aquatic insects live. This change in insect habitat, accompanied by other envi-

ronmental changes, has greatly reduced the mayfly, caddisfly and stonefly larvae (preferred food items of trout) and replaced them with the less favored small midge larvae (two-winged, fly-like insects) and aquatic roundworms adapted to living in the heavy algae growths.

SUPERSATURATION

Gas supersaturation destroyed fish in the river below the dam. Air is entrapped in the form of bubbles in the water as the water falls over the spillway of the dam. The water then plunges to the bottom of a 60-foot stilling basin where the weight of the water forces the trapped air into saturation. In effect, the air is dissolved into the water. Fish tissues and blood soon become supersaturated with gas until the gas comes into equilibrium with the surrounding water. As long as the fish stays in deep water, the gas stays in solution because of the heavy water pressure. However, when the fish rises to the surface or moves to shallow water, water pressure is reduced and gas bubbles form in the tissues and blood vessels. Under chronic exposure, these bubbles eventually block the circulatory system and cause death.

Torrent sculpins, an important forage fish for trout, have almost disappeared from the first 10 miles below the dam—apparently because of the gas bubble disease. For the first few weeks following the initial gas supersaturation problem, the shorelines were littered with dead sculpins showing various external signs of gas bubble disease. Large gas bubbles on either side of the abdomen acted as flotation devices so the dead and dying sculpins eventually washed onto shore. The long-term ecological effect of loss of these important forage fish has not yet been determined.

MOUNTAIN WHITEFISH

Mountain whitefish populations below the dam have also felt the impact of gas bubble disease and river regulation. Electrofishing and creel census data indicate

continued

whitefish are only one-tenth as numerous now as compared to pre-impoundment numbers. Mountain whitefish appear more susceptible to gas bubble disease than trout and the fry and juveniles are especially vulnerable because they inhabit shallow shoreline areas. Whitefish reproductive success in the Kootenai has been very poor since 1971 because eggs were stranded on the gravel bars when the river flow was reduced.

Prognosis for mountain whitefish populations is not good. Power production started in August 1975 and the first four generators should be on line by spring 1976. The last four generators will be installed within five to ten years, depending on funding. Power production will lessen the gas supersaturation problem because most of the water will be run through the turbines rather than over the spillway or through sluices. On the other hand, power production entails large fluctuations in river flow during most weekdays when demands are heaviest. When the whitefish spawn and their eggs incubate in the gravel, the fluctuation level will average about three feet each day and on occasion reach a maximum of six feet. Obviously, these flow fluctuations will nearly eliminate successful whitefish reproduction in the main river. In addition, construction in 1980 of the reregulatory dam about 10 miles below the main dam will block the whitefish spawning run up the Fisher River. The once popular fishery for mountain whitefish, already greatly reduced by railroad relocation, will continue to decline once power production begins.

TROUT

Trout populations in the river for the first 10 miles below the dam appear less affected by the gas supersaturation problem and river regulation than mountain whitefish. Cutthroat escaping from the reservoir continually restock this section of the river and make evaluation of the effects

of Libby Dam on the trout population difficult. It is doubtful that the trout population in the section of river where total gas concentrations are above 130% saturation could maintain themselves through natural reproduction.

The outlook for the trout fishery after power generation begins in 1975 is better than for whitefish. The rainbow and cutthroat trout spawn primarily in the tributaries and river fluctuations won't have the adverse effect on their reproduction that they have on mountain whitefish. The river fluctuations, however, will adversely affect survival of the juvenile trout, limit aquatic insect production in areas where the river bottom is alternately dewatered then flooded and reduce the opportunity to fish. Trout fishing below Libby Dam in future years should be decent, although not as good as the years before power production began.

Methods explored to mitigate the damage to the fishery resource below Libby Dam include: (1) a fish ladder over the reregulatory dam for game fish access to the Fisher River, (2) a spawning channel for mountain whitefish below the "rereg," (3) increase of minimum flows from 2,000 cubic feet per second (cfs) to 4,000 or 5,000 cfs for improved living space, (4) enhancement of natural reproduction in the tributaries below the "rereg," (5) habitat improvement and bank stabilization in tributaries below the "rereg" and (6) purchase of fishing access or scenic easements on the main river and tributaries. The last four appear most practical because there are sufficient spawning and nursery areas in the tributaries to provide enough game fish for the river from the "rereg" to Kootenai Falls, a distance of only 18 miles. The flow fluctuation associated with power production would make it quite difficult to obtain proper flows into a spawning channel or fish ladder. Enhancement of spawning success and habitat improvement in the tributaries, coupled with increased minimum flows, should

produce a better game fish population for the river than a fish ladder or spawning channel.

Fishery studies at Libby have produced data needed to recommend mitigation measures and institute a sound management program for the remaining resource. However, when one considers the overall impact of the Libby project on the fishery, it is obvious that there is no way to replace the loss of over 100 miles of a free-flowing trout stream. The opportunity to fish in the reservoir area is reduced because of limited access caused by drawdown. The fishery in the reservoir will be primarily for hatchery trout rather than wild trout. Environmental harmony and aesthetics have been lost. Opportunity to fish below the dam will be limited on many days due to high or fluctuating flows. And the winter fishery for mountain whitefish will nearly be eliminated.

In addition, relocation of the railroad up the Fisher River, Wolf Creek and Fortine Creek drainages resulted in channelization of 51,257 feet of stream with a reduction in length of 10,390 feet. Nearly two miles of trout stream can't be replaced—not to mention habitat and aesthetic damage on ten miles of rechanneled stream.

The term mitigation—which means to make less severe or harmful—was well chosen to describe agency efforts to lessen the impact of dams upon the fish and wildlife resource. Unfortunately, many proponents of dams like to place in their minds and the minds of the public the concept that mitigation means *replacement* of equivalent value or effect. The inherent characteristics and effects of large hydroelectric projects preclude forever the replacement of destroyed habitat and aesthetic values.

The continuing drastic declines in the salmon and steelhead stocks throughout the Columbia River drainage and the experience at Libby clearly demonstrate that mitigation measures fall far short of replacing the fishery of a free-flowing river with something of comparable value. 🐟



Fund for Animals Game Full of Surprises

On July 19, 1975, following a softball game between employees of WCBS-TV and the Bergen, N. J. Record newspaper, held to raise money for the anti-hunting organization, Fund for Animals, a year-old girl was severely bitten by a wolf as the Fund's president, Cleveland Amory, looked on. The wolf, one of two which were featured attractions at the game, its owner and Mr. Amory vanished immediately, the disappearance of the animal resulting in the issuance of an all-points bulletin to police throughout the country. Dr. Oscar Sussman, director of New Jersey's consumer health services, said he wanted to have the wolf tested for rabies. "According to our law," Dr. Sussman was quoted, "that wolf should not have been taken out of the state. As far as I'm concerned, he was spirited away."

From all indications, the wolf never should have been in New Jersey in the first place. Jack Downs of the U.S. Fish and Wildlife Service's law enforcement division, which is taking part in the investigation, said New Jersey law requires a special state permit before a wolf may be brought into that state, and that no permit had been issued.

The incident occurred at Fairleigh Dickinson University, when the baby, Melissa Stein, daughter of Frank and Leona Stein of Glendale, N. Y., posed for pictures with Rocky, a Canadian timber wolf brought to the game by John Harris, president of an organization called Save the Wolf.

There are several versions of what happened next. The victim's father is quoted as saying Melissa was "sitting on my lap and drinking a bottle of water. Apparently the wolf went for the bottle, missed and caught my daughter's cheek instead." Another report says the wolf placed its mouth over the girl's upper cheek and left ear—"normal behavior for the wolf, an acceptance of the baby into its pack. . . an act of affection, not malice," according to Richard Kenly, New Jersey representative of Fund for Animals. Maybe so.

But another observer said everyone froze when that happened and the father started to pull his child away as the wolf's owner grabbed on the leash. The wolf hung on, inflicting wounds on the baby who required plastic surgery at Holy Name Hospital in Teaneck, N. J.

After learning he was the object of a nationwide search, the wolf's owner called New Jersey officials from Chicago and promised to

SPRINGBOARD

"If a golden eagle can eat one jackrabbit per day (which it can) and if eight jackrabbits will eat as much grain as one eight-hundred-pound steer (which they will), does it then follow that when somebody illegally shoots an eagle, he saves the lives of 365 rabbits and starves 45 head of cattle?"—*Conservation News*

FOR DISCUSSION

have the animal taken to a veterinarian for tests. At this writing there has been no public announcement from Mr. Amory, whose Fund for Animals was the beneficiary of the game. That's not unexpected, of course. He's always been a master of the hit-and-run technique. Now it's seen he's just as efficient at the old "run-and-hide."

Perhaps the most interesting question is not why the wolf and Mr. Amory vanished—that isn't hard to understand—but how the news was kept quiet so long. As mentioned, the accident occurred on July 19, but not until five days later, after an interested agency had begun to investigate, was it publicized locally. On July 24, the New York Daily News published an account by Stewart Ain, who learned of it on July 23. Hopefully we'll be forgiven for wondering who had the clout (and self-interest) to keep such a newsworthy story off the wires. Especially when everyone involved was an employe of one news medium or another.

We can't help thinking what the newspaper and television coverage would have been like had a wolf bitten a baby girl at a National Hunting and Fishing Day gathering of sportsmen, for instance.—*Bob Bell, reprinted from Pennsylvania Game News*

FACTS ON WATERFOWL HABITAT

Of the approximately 13.5 million acres preserved for migratory bird habitat in the United States, 8.25 million acres (61%) are preserved as a direct result of hunting-oriented programs, according to the National Shooting Sports Foundation. This basic fact sums up the critical role that America's duck and goose hunters play in the conservation of both waterfowl and a host of other wetland species, from marsh wren to osprey.

Of these 8.25 million hunter-financed acres, 5.2 million acres are owned or controlled by waterfowl hunting clubs. These private wetland and marsh areas

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are not only managed to provide prime waterfowl habitat but also to keep them out of the hands of those who would drain, dredge or "develop" these irreplaceable natural habitats. In 1974, for example, a group of South Carolina duck hunters, members of the Santee Club, donated their 25,000-acre coastal tract to a land conservation agency. Much sought after by commercial interests, this \$20 million piece of real estate will now remain as part of the nation's wildlife heritage.

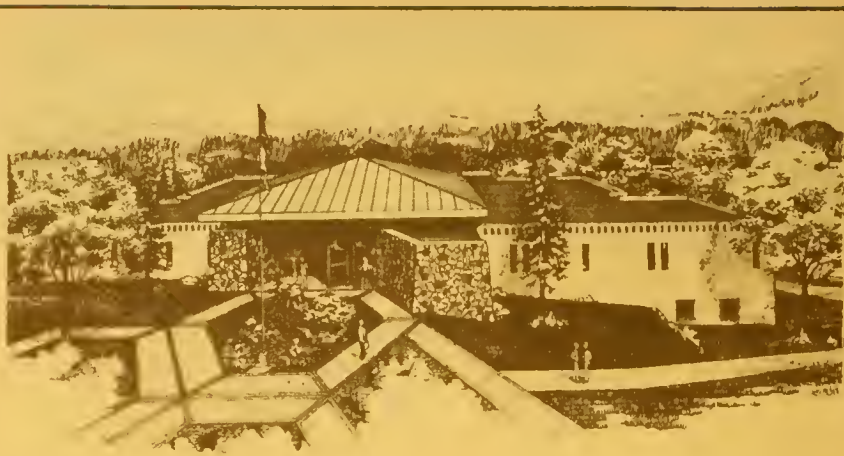
The private efforts of waterfowlers have also been instrumental in preserving Canadian breeding grounds, where over 70% of all waterfowl originate. In its 38-year history, Ducks Unlimited, an organization supported largely by U.S. waterfowlers, has raised over \$35 million to create drought- and flood-proof habitat covering 2 million water acres and encompassing 11,000 miles of shoreline on 1,200 projects across Canada.

Waterfowl hunters also make significant contributions to federal and state habitat programs.

Since 1934, all waterfowl hunters 16 years or older have been required to purchase an annual federal migratory bird hunting stamp, commonly called a "duck stamp." Revenue from duck stamp sales is now about \$11 million annually and, to date, this program has collected over \$153 million for acquisition of some 2 million acres of waterfowl production habitat and National Wildlife Refuge lands.

Additionally, monies expended on sporting arms and ammunition include an 11% tax, earmarked for state wildlife restoration programs, including acquisition and development of migratory bird habitat. Since this tax was imposed in 1939, it has raised enough money to provide the Federal Aid in Wildlife Restoration Program with funds for acquisition of 1,050,000 acres by individual states.

Conservationists agree that the key to wildlife populations is proper habitat. And in the case of



NEW DEPARTMENT BUILDING

A new headquarters building for the Montana Department of Fish and Game is under construction in Helena. Since a few sportsmen have wondered why we're doing this during tough economic times, we thought we should pass along some pertinent facts.

True, the department is having financial problems, like everyone else. This is especially true when one considers the many dollar-demanding problems facing wildlife and recreation today. Nevertheless, we feel the new building represents a good deal for the department, Montana sportsmen and the wildlife resource.

The department presently rents 12,723 square feet of office space in the State Capitol complex. In addition, other department offices are located elsewhere in the Helena area.

The Department of Administration has indicated that our present offices are needed for other agencies. So, it wasn't a question of whether we should move, but where and when.

We considered renting other office space in Helena, instead of constructing a new building. But after some lengthy investigation, it was apparent this was a bad long-term investment.

The rate at which we could expect to rent office space was about \$5.25 per square foot. Also, the department desperately needed additional office space—conservative estimates ran around 23,000 square feet, just to efficiently accommodate and consolidate existing personnel. So with this in mind, we were looking at an annual rental tab of about \$120,000.

The new building (23,723 square feet) will cost about \$650,000. Using these figures and considering maintenance and other related expenses, the department can pay for the new building in about 64 months (five years and four months), according to the Department of Administration. In other words, the money we spend on rent will pay for a new building in 5-6 years. Also, the building will make Helena operations more efficient by housing most employees under one roof and avoiding crowded conditions.

Considering this, we feel it's the best long-term option for the department, sportsmen and the wildlife resource. Hopefully, you agree.

We'll let you know when it is finished and hope you hunters and fishermen who are paying for it will come and visit us when you're in Helena.

waterfowl habitat, the facts are clear. No other group has done—and is continuing to do—more to preserve and enhance the native environment of migratory birds than America's waterfowl hunters.

STUDY SHOWS WHY LANDOWNERS ALLOW HUNTING

A study by the Pennsylvania State University forest technician unit shows that landowners in south central Pennsylvania who allow public hunting on their property have experienced very little trouble with hunters, according to the Wildlife Management Institute.

Previous studies have been conducted to determine why landowners post their property, but this is probably the first to determine why other landowners do *not* post their land. As might be expected, landowners who allowed public hunting had not been victims of misconduct by hunters. Conversely, studies of landowners in other areas who did post their land indicate that hunter misbehavior was the primary reason. Therefore, the combined results provide strong evidence that hunters' behavior determines to a great extent whether land is posted or remains open to public recreation.

In the Penn State study, 76% of the landowners said they were concerned about liability for accidents on their land; however, they still wanted people to enjoy hunting on their farmland. Some 87% of the farmers said they would like to have hunters ask permission to hunt. The farmers interviewed look upon open land policies as a community service.

The Penn State study and others carry an important message for sportsmen and others who depend on private land for recreation.

BIRDS AND BUGS

In any reckoning of animal values, songbirds score high for their tireless warfare on insects. But game birds deserve a little credit too, according to Remington's research bureau.

Most game bird species feed largely on vegetative matter in adult life. But during the first few months of existence, their diet is almost exclusively insects.

Up to the age of 10 or 12 weeks, the young of quail, pheasants and grouse spend most of their waking hours in pursuit of bugs. It could be more than accidental that some of the densest pheasant populations occur in areas offering bonanza supplies of grasshoppers, Mormon crickets or some other equally available insect.

Ducks also start life as insectivores and continue to feed heavily, if not exclusively, on insects and related materials until they are half grown. Rapid growth requires a high level of protein which animal tissues provide. It is doubtful that our common game birds could survive and multiply in the absence of insects.

FIRST DEER—A DOE (WITH ANTLERS)

Terry Zindler of Rapelje, Mont. hunted deer for the first time last year. He'd just turned 13 and completed his hunter safety training when he and his father headed toward the rough "breaks" near Reedpoint to hunt mule deer. It was the last Sunday of the season.



Terry sighted a deer and fired. He was successful and his father was proud that his son would have a "nice antlered buck" by which to remember his first hunt. Then, Zindler's eyes bugged as he got down to the business end of

dressing out the muley. It was a doe.

The two surprised hunters field dressed the doe, leaving the telltale organs intact and returned home to the Zindler ranch. Al Meier, a Stillwater County hunter safety instructor, verified the gender of Terry's deer and brought the head in to the Region 5 fish and game office in Billings.

H. O. "Buck" Compton, Region 5 game manager, checked over the uncommon head and noted that in his 20 years as a game biologist, he'd only seen about 6 antlered does and none as resplendent as this one.

Further checking with the Nebraska Game and Parks Commission revealed that a lengthy study of abnormalities in wild deer turned up about one antlered doe for every one thousand—that's one-tenth of one per cent.

Terry is probably getting ready for the 1975 deer season, but he'll have to hunt a long time to top his first year's showing.

MORE SPORTSMEN PROVIDE MORE MONEY FOR WILDLIFE

A record 43.5 million sportsmen paid over \$270 million for state hunting and fishing licenses last year, the Wildlife Management Institute reports. They also provided an additional \$75 million via manufacturer's excise taxes on sporting arms, ammunition and fishing tackle. Those two sources alone provided almost all the funding for state fish and wildlife management programs, including those for nongame and endangered species.

During the 1974 fiscal year (FY), 16,397,367 hunters spent \$142,912,335.10 for state licenses, tags, permits and stamps. That is an increase of 888,055 hunters and \$19.2 million from 1973. In that same period, 27,080,305 fishermen spent \$127,793,568.07 for licenses, etc.—an increase of 868,304 fishermen and \$9.4 million from 1973.

From FY 1923 through FY 1974, hunters paid over \$2 billion for licenses. Since 1939, they have

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paid over \$624 million in excise taxes. From FY 1933 through FY 1974, fishermen spent over \$1.8 billion for licenses, and since 1950, over \$193 million in excise taxes. That totals over \$4.6 billion which sportsmen have provided to state fish and wildlife agencies for their essential work. No other segment of society has anywhere near that record of expressed concern for fish and wildlife resources.

"VERY FEW PEOPLE KNOW HOW TO GIVE"

Don Anderson, a Montana native now living in Madison, Wis., recently gave the department 55 acres of prime real estate

along the West Gallatin River.

Why give away thousands of dollars worth of recreational land? "I thought by giving the land [to the department], I would influence others to do so also," Anderson stressed. "Very few people know how to give."

Anderson, retired from 50 years with Lee Newspapers, Inc., insists part of the contract will state that this land is "for exclusive public purposes." Although he gave the land without restrictions, he welcomes the department's decision to prevent use of motorized vehicles such as snowmobiles, motorcycles, ATVs, etc. Such

vehicles are all right in some places, but not in this particular wilderness type area, he noted. "This is horse country, backpack country, wild game country. Motor vehicles can spoil the area for these other important enthusiasts," he said.

The land houses deer, elk and moose. And public ownership will guarantee fishing access to the river.

Anderson realizes people only own land for a relatively short time. Then, it passes on. So he feels this land would best serve unborn generations in public ownership.

He also dislikes the development trend prevailing in the Gallatin Canyon—and especially the haphazard, shantytown construction along the highway. "If decent zoning goes in from Buck Creek to Yellowstone National Park, it may remain like it is now," he concludes. "Otherwise, the area will be lost."

Personal property rights are dear to the hearts of many westerners. And any possible infringement on these rights is quickly blasted. Last year, for example, Chester French, a Helena area rancher, sold some wildlife-rich bottomland to the Forest Service at a low price so the public could enjoy it forever. Soon after the deal closed, the local property owners' association sharply criticized French.

But Anderson feels that although property rights are important, their defense can go to extremes—after all we only own it for a short while. Commenting on this, he recalls what a friend once told him, "When you get old, you start thinking about what the future holds for others. Old men plant trees for the future."

USDA REFINES CORPS SCARE TACTICS

The U.S. Department of Agriculture should win some kind of award. It has devised a theory that plowed fields are navigable waters, according to the Wildlife Management Institute.

That amusing deduction arose



Don Anderson (left) and department biologist, John Cada, discuss Anderson's noteworthy gift to Montana sportsmen. F&G photo by Steve Bayless

following the Corps of Engineers' attempt to scare people into opposing enactment of its own regulations which would require Corps permits for developments in navigable waters. The Corps said that if it followed Congressional orders and defined navigable waters as "waters of the United States," a farmer may have to get permits to "protect his land against stream erosion."

USDA took the Corps' lead. In its June 3 interagency comments on the proposed regulations, USDA said the new regulations may require 14 million permits a year for farmers to plow. According to USDA, snow melt and precipitation on land are waters of the United States; therefore, "virtually all land areas" would be navigable waters because they are covered by that water. Secondly,

since a plow lifts the earth, that action can be designated as dredge. Finally, after the plow lifts the earth, it drops back and can be designated as fill. USDA says there are 2.8 million farms in the U.S. Farmers plow their land approximately five times a year. USDA multiplied 2.8 million farms by five plowings a year and deducted that the 14 million permits would be required.

SLIPPERY BILL AND THE BIG BEAR

Slippery Bill was one of Montana's most colorful early forest rangers. He worked for the Forest Service (FS) and homesteaded in the early 1900s around Summit, on the Middle Fork of the Flathead River. He earned the nickname, "Slippery Bill," by always slipping away from poker games with big winnings without getting robbed or murdered. which was commonplace in early gambling towns.

Slippery Bill—or William H. Morrison as he was occasionally known—left his mark on the Middle Fork. He gave his 160 acres of land to the FS. Later, the government constructed a monument to Theodore Roosevelt on the site. Near it, a brass plaque in a boulder commemorates Slippery Bill's contribution.

Slippery Bill Mountain, also named for the famous ranger, is a few miles northwest of Summit. Before long, however, people won't associate "Slippery Bill" with Montana's colorful history or with a mountain. They will associate it with a subdivision, Slippery Bill Mountain #2. A group of prominent Kalispell businessmen has split up 160 acres along U.S. 2 on the southwestern border of Glacier National Park into second home plots.

Our department became concerned early in the environmental review. Personnel from the Kalispell regional office criticized the

development's impact on wildlife, especially the grizzly.

Ironically, a few weeks later the trustee for the businessmen came into our Kalispell office complaining about a grizzly that was

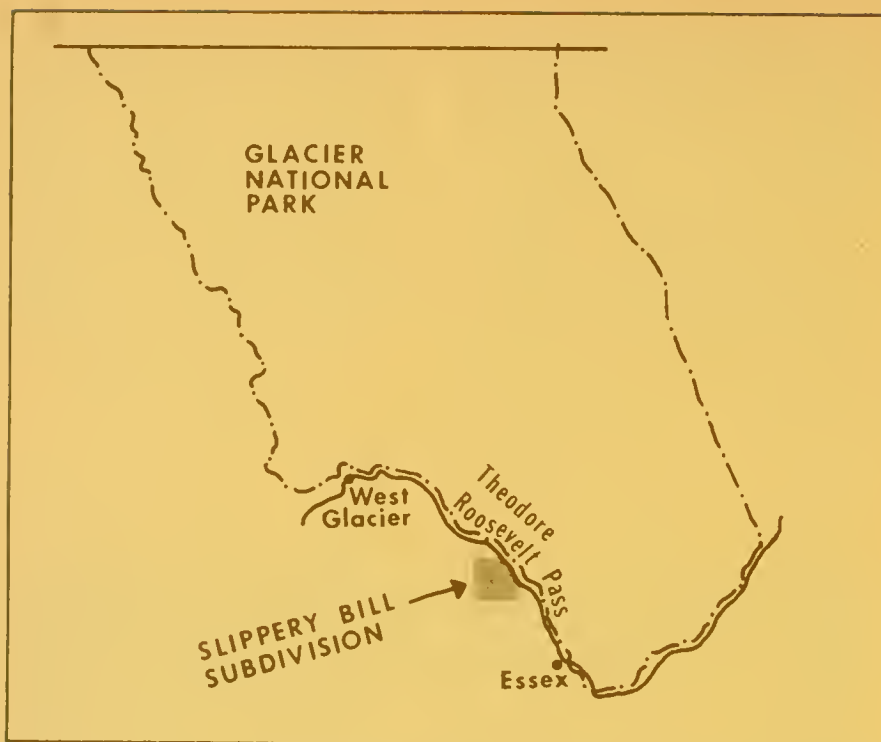
tearing up some old cabins and, in general, making a nuisance of himself on the subdivision site. This was *before* the subdivision received official approval. So the development hadn't even begun.

Department wardens snared the

continued



The Slippery Bill subdivision represents only one of many examples of our steady encroachment into the grizzly's last retreats. photo by Doug Looney



bear (a large male) and moved him to a region free of subdivisions. This made the developers happy, but it didn't solve anything. Instead it was a classic case of treating the symptoms and ignoring the disease. Most likely, more "problem bears" will surface as Slippery Bill Mountain blossoms into a crowded wilderness retreat.

Actually, this represents one small piece of a much larger problem. The grizzly's domain has been whittled from its former vastness to a few slivers of security. Indeed, Montana is fortunate to have retained enough natural integrity to support more grizzlies than any other state, excluding Alaska. But if we keep squeezing the bear, he won't last long.

Whenever you put grizzlies and humans in the same place, you have trouble. Montana still has many places available for home building in or adjacent to urban centers—sites that *can't* support grizzlies. By-passing these and moving in on the bear gradually pares away available habitat.

It's a slow process, with a conclusion difficult to comprehend. People move into the grizzly's territory. They have a

few "problem bears." They call our department. The wardens take care of the bears. After the development fills, residents don't see many grizzlies. And they wonder why. Sometimes they become very concerned about the disappearing grizzly and criticize our department for overhunting or mismanaging the resource.

This subdivision has undergone some serious planning—except for its *location*. The day when this nation can justify recreational

subdivisions many miles from urban centers has already passed. Placing them in remaining grizzly habitat makes second home subdivisions even more inappropriate.

It's easy for us to say Slippery Bill Mountain #2 shouldn't receive approval. But that raises another question. What happens to that 160 acres which has become so overpriced that the only way the owners can receive any return on their money is subdivision or equally destructive development? After businessmen are neck-deep into a plan, an economically palatable alternative may not be possible. They could take a financial beating and not subdivide. But the likelihood of that happening is meager at best.

Interestingly, local residents rarely know *who* actually subdivides the land. Instead of frowning on second home developers, locals consider them outstanding community leaders.

In retrospect, this second home community probably will go ahead. It will adversely affect the grizzly and other wildlife. And perhaps the developers who like the idea of having grizzlies around and dislike the idea of them disappearing will wish they hadn't gotten themselves into the position of placing an additional burden on the already beleaguered bear.

MOVING?

If you're planning to move in the near future, please attach the label from your last issue and send it and your new address to *Montana Outdoors*, Department of Fish and Game; Helena, MT 59601.

NEW ADDRESS:

Name

Address

City State Zip

POPLAR RIVER PROJECT:

IMPACT OF CANADIAN PROJECT SPILLS OVER INTO MONTANA

by Mike Aderhold

WHILE Montanans debate the merits of Colstrip #3 and #4, our Canadian neighbors in Saskatchewan are wrestling with a similar issue that may affect our state as well.

A large lignite deposit—at least 300 million tons—lies just 16 miles north of Scobey, Mont. near the small town of Coronach, Sask. The 21,000-acre coal reserve straddles the west branch of the East Poplar River and runs parallel to the other branch. (See map.) Federal and Provincial programs to study this coal reserve and the East Poplar River water supply began in 1971. A year later the Saskatchewan Power Corp. (SPC), a crown (Canadian government) agency and Saskatchewan's energy monopoly initiated a feasibility and engineering study of the area for possible construction of a coal-fired power facility. By mid-1974, the SPC decided the Coronach site was the best of its alternatives and began to push the project.

In September 1974, a 56-page outline of the Poplar River Power Project was made public. In this report, the SPC proposed four 300-megawatt (mw) units, or a total production of 1,200 mw. (Compare these units to Colstrip #1 and #2, now under construction, each producing 330 mw. If approved, Colstrip #3 and #4 will produce 700 mw each. All four Colstrip units could produce 2,060 mw.) The initial Poplar River unit is scheduled for completion in 1979 and will

consume 1.8 million tons of coal, roughly 2,000 acre-feet of water per year and disturb from 160 to 320 acres a year. (An acre-foot of water equals 325,872 gallons.) When fully developed, the project will consume between 6 and 7 million tons of coal a year, or somewhere between *180 and 210 million tons* during the projected 30-year life of the project.

A cooling pond for the generation units will be formed by damming the East Poplar two miles north of the Montana border. This fork drains about 200 square miles and yields an average of 11,900 acre-feet per year with a recorded range from 2,100 to 35,000 acre-feet per year. This natural flow could supply sufficient water for the initial unit, but complete development will require supplemental water from other sources. The reservoir will eventually cover 1,200 acres and store about 27,000 acre-feet. The 1,200 mw project will consume about 7,800 acre-feet a year and cooling water will be circulated back to the reservoir. The initial unit and associated development will cost an estimated \$126 million.

In this project, the issues of transmission line siting, site degradation and the problems of reclamation, financing and people management are Canada's. However, the problems of water quality, loss of wildlife habitat and air pollution may be ours.

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The three main forks of the south-flowing Poplar River all originate in Canada. The east and middle forks join a few miles north of Scobey and the west Fork flows in some 20 miles south on the Fort Peck Indian Reservation. The entire waterway drains 3,174 square miles and averages 129 cubic feet per second (cfs) or just over 93,000 acre-feet a year. But the averages are deceiving. The river has occasionally slowed to a trickle; but once in 1946, near the town of Poplar where it has its mouth, the Poplar River *quadrupled* the average flow of the Missouri.

Even during the driest years, the 80-mile river experiences some water flow and pools are kept clear and relatively cool. The river supports a healthy self-sustaining walleye population and offers fair catfish, northern pike and sauger fishing, especially between Scobey and the mouth of the west Fork. A 1970 plant of brook trout appears to have taken hold in the west Fork and may expand into the other forks. Fourteen other fish species, mostly minnows, have been collected in the area.

In addition, the cottonwood bottomlands offer food and shelter to many of the area's mule and white-tailed deer and to over 60 bird and mammal species, according to department information. The river also provides water for irrigation of about 8,000 acres, mostly in hay.

Three factors may endanger this water and wildlife resource:

- First, in most years, the East Poplar furnishes 12-13% of the Poplar's flow. If this percentage is decreased significantly, it could affect the better

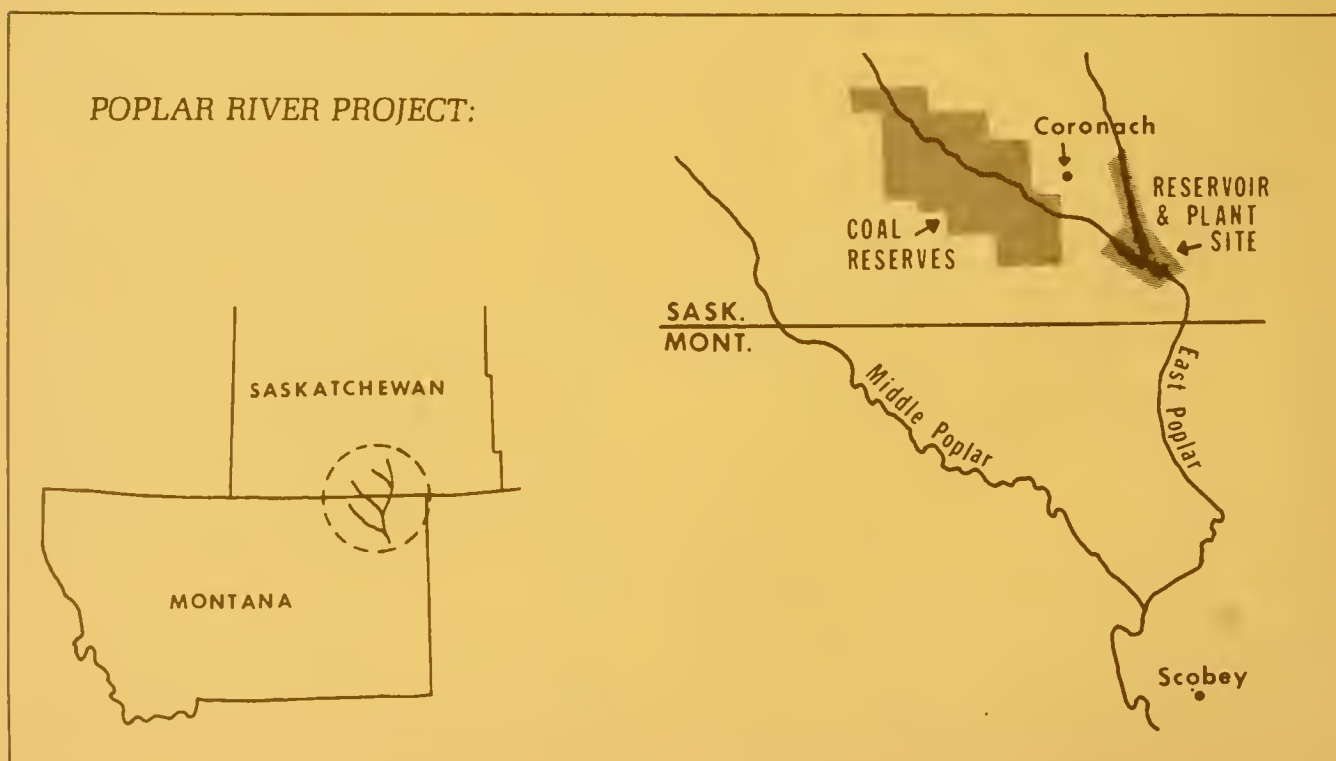
spawning areas north of Scobey and will probably cut the number of pools capable of supporting wildlife during the dry years.

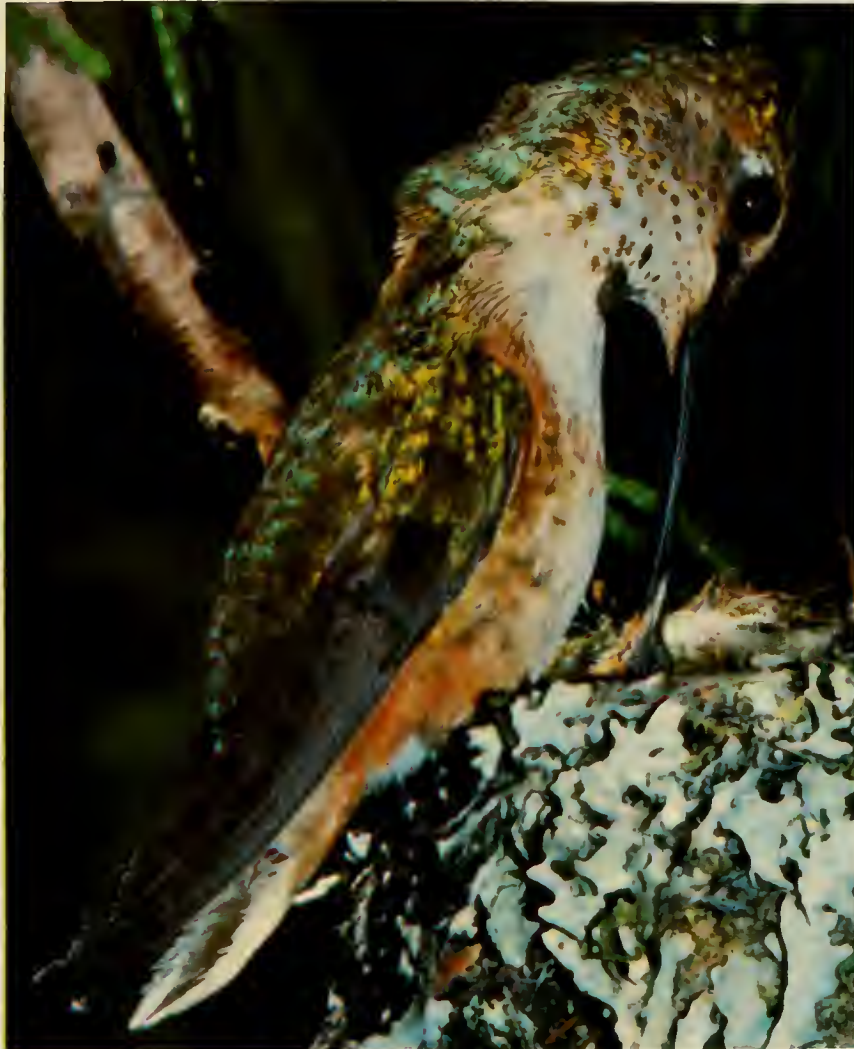
- Second, consumption and forced evaporation of water by the generating plants will concentrate the salts and heat the returned water. When discharged, this water will be of poorer quality, perhaps affecting the fishery as well as the irrigators.

- Third, in an area where subsurface flow is important, strip mining the west branch of the East Poplar River might have an effect. Acid waste and coal fines (dust-like particles) are just two possible pollutants.

The other area of concern is air pollution. Plans call for construction of two 500-foot concrete stacks, one for each pair of 300 mw units. These stacks remove pollutants from the immediate vicinity of the power facility, but the suspended particulates, sulphur dioxide and oxides of nitrogen must come down somewhere. With the prevailing northwestern and sometimes southeastern winds, a lot of that "somewhere" will be in Montana. Our air emission standards require a higher level of pollution control than Canada's. The specific effects of such pollution aren't certain. This situation is currently being researched and hopefully, proper emission standards will be arrived at before construction begins.

The first phase of this project has been approved by the government of Saskatchewan and dam construction has begun. Unlike the U.S., Canada does not require a complete environmental impact statement or reclamation plan before construction. Many environmentally aware Canadians are questioning this effort and maybe we should too. —Mike Aderhold 🐻





1976 Montana Wildlife Calendar

It's that time of year when most people look at their 1975 calendars and start thinking where they might obtain a 1976 model. Maybe your bank or milkman or cleaners might oblige. But we also have an idea. Subscribe to *Montana Outdoors* for three years—it costs only \$8—and you'll receive a free calendar, plus 18 issues of a magazine filled with articles on fish, wildlife, environmental problems, Montana's game and nongame species and lots more.

If you give a friend a three-year subscription, both you and he receive the calendar. This year's edition features the antelope, sparrow hawk, hummingbird, bobcat, ducks and wolf. But order soon, because our supply won't last forever.



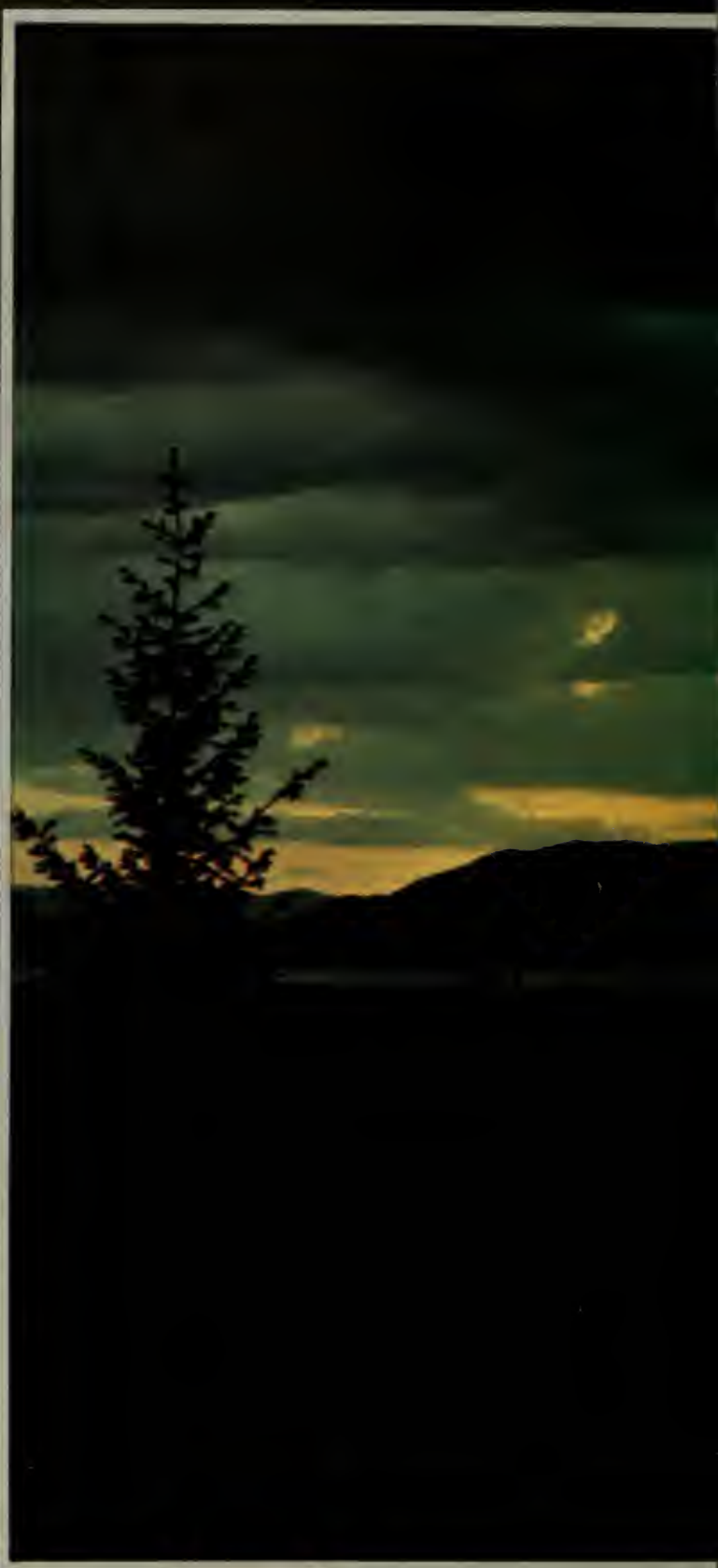
sunlight, silhouettes and solitude

PHOTOS BY JON CATES

TEXT BY ALDO LEOPOLD
(From "A Sand County Almanac")

"Like winds and sunsets, wild things were taken for granted until progress began to do away with them. Now we face the question whether a still higher 'standard of living' is worth its cost in things natural, wild and free. For us of the minority, the opportunity to see geese is more important than television, and the chance to find a pasqueflower is a right as inalienable as free speech.

"These wild things, I admit, had little human value until mechanization assured us of a good breakfast, and until science disclosed the drama of where they come from and how they live. The whole conflict thus boils down to a question of degree. We of the minority see a law of diminishing returns in progress; our opponents do not."





"It is fortunate, perhaps, that no matter how intently one studies the hundred little dramas of the woods and meadows, one can never learn all of the salient facts about any one of them."



"We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes—something known only to her and to the mountain. I was young then, and full of trigger-itch; I thought that because fewer wolves meant more deer, that no wolves would mean hunters' paradise. But after seeing the green fire die, I sensed that neither the wolf nor the mountain agreed with such a view.

* * *

"Since then I have lived to see state after state extirpate its wolves. I have watched the face of many a newly wolfless mountain and seen the south-facing slopes wrinkle with a maze of new deer trails. I have seen

every edible bush and seedling browsed, first to anaemic desuetude, and then to death. I have seen every edible tree defoliated to the height of a saddlehorn. Such a mountain looks as if someone had given God a new pruning shears, and forbidden Him all other exercise. In the end the starved bones of the hoped-for-deer herd, dead of its own too-much, bleach with the bones of the dead sage, or molder under the high-lined junipers.

"I now suspect that just as a deer herd lives in mortal fear of its wolves, so does a mountain live in mortal fear of its deer. And perhaps with better cause, for while a buck pulled down by wolves can be replaced in two or three years, a range pulled down by too many deer may fail of replacement in as many decades."





"To build a road is so much simpler than to think of what the country really needs. A roadless marsh is seemingly as worthless to the alphabetical conservationist as an undrained one was to the empire-builders. Solitude, the one natural resource still undowered of alphabets, is so far recognized as valuable only by ornithologists and cranes."





"Conservation is getting nowhere because it is incompatible with our Abrahamic concept of land. We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. There is no other way for land to survive the impact of mechanized man, nor for us to reap from it the aesthetic harvest it is capable, under science, of contributing to culture."



"I have congenital hunting fever and three sons. As little tots, they spent their time playing with my decoys and scouring vacant lots with wooden guns. I hope to leave them good health, an education and possibly even a competence. But what are they going to do with these things if there be no more deer in the hills and no more quail in the coverts? No more snipe whistling in the meadow, no more piping of widgeons and chattering of teal as darkness covers the marshes; no more whistling of swift wings when the morning star pales in the east? And when the dawn-wind stirs through the ancient cottonwoods, and the gray light steals down from the hills over the old river sliding softly past its wide brown sandbars—what if there be no more goose music?"





A Nonresident's View of Hunting

The battle lines for the end of hunting in America have been drawn. Whether it is intended or accidental, it is a real can of worms and will lead to many camp and home arguments. The true answer is out of reach of the average person because he or she does not really care. They do not want to get involved.

The hunter is a curious and inquisitive lot. It seems like he wants to know just about what everyone is doing and about anything that is going on. This in itself is going to help end hunting and will be the leading cause. How did the hunter do it? It is very simple. He complained. The hunter saw what the logging outfits were doing (stealing trees), the coal strippers (in areas without proper permits, polluting the streams and raping the land), the gravel strippers (digging any place and moving on), the cattle owners (grazing the high country, winter range for deer and elk, and then complaining when the wild animals are in their haystacks in winter), the real estate developers (ruining the best land—looking for more—who will never get enough land to destroy). These are just a few who do not want the hunter. You can look around and see who the others are.

It was the hunter who ran to the Department of Fish and Game and complained about the abuses of the land. It was the hunter who wrote to the senators to save the land and wildlife. It was the hunter who got industries and businesses into hot water and it had to be the hunter who had to go. Now the hunter is on his way out. It is just that simple.

How many areas have you seen posted lately? Check it this year and you will find out it has doubled from last year. How many new road closures have you seen? How much land did the oil and coal people buy or lease the past year? How many ranches have been bought and posted? How many power plants are on the books and where will they be built? How much public land has been given or traded to industry through the guise of the energy crisis? From 7-1/2 million acres of Bureau of Land Management and public lands, we now have 4-1/2 million acres left. Where did the other 3 million acres go? These are a few encroachments by government and industry.

Now you are starting to see the light at the end of the tunnel and it shines on the hunter. Industry has to get rid of the

hunter if it is going to have an open hand in the destruction of Montana and the other western states.

Why the hunter? It should be the nonresident hunter first and then the resident hunters. The nonresident hunter is from other states and he can see what is going to happen to Montana and the West. It all happened to him years ago in his own state. Kentucky, Ohio, West Virginia and Pennsylvania are just a few examples of what is in store for Montana and the West. Industry will do to Montana as it did to the others. Industry raped and destroyed the East—got the money—left the land for the taxpayer to restore and headed west. Now it is in Montana and the West and already you can see the damage it has caused to the land.

Twenty-eight power plants for eastern Montana don't leave much room for anything else. When the pollution starts, it won't be "Big Sky" anymore; you can call it "Big Soot." The promises to clean up the pollution are a big joke. "What do you want, clean air or heat this winter?" asks an industry. We all know that we can have both—but you know what you will get. On certain days you cannot see across the Grand Canyon due to pollution from the Four Corners Power Plant. That power plant is over 200 miles from the Grand Canyon and it already has caused pollution of the area. It was supposed to be pollution controlled and industry did "promise."

No more will I be able to look across the prairie for deer and antelope in eastern Montana. They will all be gone and in their place you will see the huge monsters ripping, tearing, digging and clawing at the earth. The hunter will now be the hunted. The coal outfits do not want you looking around and will put you off the land or post it against hunting. That is how they will eliminate the hunter. The hunter can't see what is going on, if he is not there to see what is happening.

Colstrip was to be the one and only power plant for that area and now #3 and #4 are in court, with many more on the books to be built. All the residents I know in Montana told me how tough the law there is and that they would stop them from building the plants. Looks like you joined them instead of stopping them. "Don't worry about it—they are not near me," seems to be the general attitude.

The Yellowstone River will be gone and most of the water tables with it. All this water is needed to cool the power plants and it has already started. You should have listened to the out-of-state tourists and hunters and saved Montana. Others having deep concern for the land were also pushed aside for the concern of industry. The hikers, bird watchers, fishermen and skiers all saw what was going on and also were pushed aside for the good of the industrial complexes. No matter what happens to Montana, I shall always remember the wonderful days that I spent there hunting. From Glasgow to Jordan, Belt to Columbia Falls, Hot Springs to Missoula, I have seen the best of the state.

By raising the nonresident hunting license you are helping to eliminate the hunter from Montana and other western states. You are keeping out hunters who pay their way. In eight years of hunting in Montana, I have paid the state \$1,660 in license fees. This is matched by three federal dollars for every one dollar of mine. The total of my hunting dollars is \$6,640, which the state of Montana put into hunting and fishing for its residents. How many resident hunters would it take to match these funds? I do not know of one person who had a resident sportsman's license for the amount of \$20. It will take 332 resident sportsman's licenses to match my amount and probably 500 resident hunters before you match my amount of \$6,640. See where you missed the boat? You should have raised the resident fee or cut them back from hunting if you are really so economically oriented and really go where the money is. Time will tell what the future of hunting in Montana will be and I hope and pray that it is for the better.

The hunter or outdoorsman should be like the three monkeys—"see no evil, hear no evil and speak no evil," and then he could fit into the plan. But he is just a man and for this it has cost him—it cost him his hunting.—*Andrew Cherpak; Meadow Lands, Penn.*

DEPARTMENT COMMENDED

I would like to commend the Department of Fish and Game for its work in preserving the Rocky Mountain bighorn sheep in areas of Montana. I spent three weeks on a work project with the Youth Conservation Corps at the headwaters of Gibson Reservoir. Hardly a day went by that we didn't observe bighorn sheep. I also watched them a year earlier on a backpacking trip in the area.

The animals were considered an endangered species in 1941, but due to the department's work and the cooperation of the government and the public, we Montanans can boast of having one of the last strongholds of bighorn sheep. I sure hope we can keep it up, for these animals deserve a chance to hold some of their native grounds on which to live and flourish.

continued

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Beside, it's nice to see a bighorn lamb following its mother down to the grazing area in the sunset. —Randy Kviper; Great Falls, Mont.

CYCLE OF THE RAG

When I read about these rich yokels from the eastern states coming into our beautiful Montana valleys like the Gallatin and ruining them with their big resorts, dude ranches, ski runs and such, it sure burns me up. They have ruined all of God's works in their own states, now they want to ruin ours. Say what they will about making recreation for people, they do it for the money they can make from it. They don't care one bit about the deer, elk, moose and the birds they are running out of their homes.

I think when it comes to hunting and wildlife laws, each and every state should have the right to make and enforce its own. And I also think all laws—regardless—should be put to a vote of the people. I just returned from a year or so in Wisconsin, but I wouldn't live my life there if somebody gave me a home. For miles in and around Milwaukee, you can't tell when you leave one town and enter another.

I often wonder if any one has estimated just how many millions of acres have been taken up in the U.S. with roads? Consider the country roads, highways, freeways and super highways. Where at all possible, they usually choose the best agricultural land for roads. For instance, take the beautiful Yellowstone Valley. They could have put the road up by the buttes with a little more grading. But no, it had to go right through the best of the farmland. There is a small valley near Milwaukee where the whole place looks like a spider web, all roads joining the big freeway. That's the way it is—no land left to farm.

Now, a lot of the eastern states don't have enough farmland to feed the people there, so after it's too late, they pass laws where a farmer can't sell less than five acres in one lot.

This whole life is getting like the cycle of the rag: Rags make paper, paper makes money, money makes banks, banks make loans, loans make debts, debts make poverty, poverty makes rags—so there you are back to the rags again. And money is at the bottom of the whole cycle.

Excuse my griping, but I do get so mad when people disturb what God gave us. —Georgia A. Sutton, Billings, Mont.

WOULD THE FBI PINCH POACHERS?

Various writers in your magazine have expressed the fear that the federal government may try to take over our big game population. The fear is well founded, it goes without saying.

I would like to make one point on this subject. It's a well-settled law that the wild game population of a state is the property of the state. It doesn't matter whether it is on federal, state or private property, it is still the property of the

state. Provisions in the federal constitution prohibit a take-over of property by the federal government without just compensation. Now, is our already bankrupt federal government going to pay each individual of each state for all of the property so confiscated, or will it just try to get away with paying the 50 states? The government couldn't take over just Montana's wild game population—that would be discrimination. It would also have to take over control of all game, not just that on federal land.

Next, it would have the problem of policing to make sure that poachers didn't hunt out of season. Would that be done by the FBI? It certainly would be a federal offense.

Nobody has any doubt about how adept Congress is at coming through the back door to get what it wants, but would the government want control after it got control? Could it handle the job once it had control? —David W. Stewart; Helena, Mont.



Mike Aderhold's article, "The Gas Company's Pipe Dream," (*Montana Outdoors*, July/August 1975) prompted me to write to you with some of my concerns and views.

My husband works at the far northern end of the oil pipe line at a work camp called Dead Horse. Most Alaskans feel that the gas pipe line should follow the oil line and use the same access roads and back camps already set up. The caribou are very unconcerned by the work going on—and are happy to have the gravel pads, on which all construction must be built, to get away from the pesky mosquitoes.

We are concerned about Canadian control of our huge gas reserves if the pipe line goes through Canada. The need to provide jobs for Americans, not Canadians, also concerns us.

We enjoy your magazine and find it gets better every year. We are from the Scobey and Glasgow area and have been in Alaska four years. —Mrs. J. A. Hillstrom; Palmer, Alaska

* * *

Regarding Mike Aderhold's article, "The Gas Company's Pipe Dream," in the July/August 1975 *Montana Outdoors*, he ought to be a little more careful about his facts and how he writes them.

(1) The Fort Peck Indian Reservation is not public land. Although part of it is administered by the Bureau of Indian Affairs, it is private land.

(2) Statistics are presented indicating the pipe line and associated works will

involve 2,306 acres of Montana land, with 2% of this, or 46 acres, to include floodplains, streams, wetlands and rights-of-way. The author then puts wetland disturbed or destroyed at 147 acres. I assume the author means the pipe line will influence 147 acres of wetland, but that certainly is not the context in which he's writing.

(3) Finally, he finishes the article in an emotional tizzy. "But animal species on an entire continent will be adversely affected." Now just how are the Kaibab deer, the California condor, the Utah elk or the Mexican songbirds affected by this pipe line construction? The next to the last sentence, "A huge investment of non-renewable resources and materials will be required—all to fuel a flash-in-the-pan answer to energy shortages," is purely judgmental and relative. The final sentence, "Perhaps more than just the nation's priorities should be reordered," says nothing.

We need factual information and it would have been a real service if Aderhold had stayed with that objective. As it is, I wonder how many of his purported facts are correct. Credibility gap? —Gene F. Payne, professor of Range Sciences, Montana State University; Bozeman, Mont.

•You're right, the Fort Peck Indian Reservation isn't public land. We obtained the information from the draft environmental impact statement prepared by the U.S. Fish and Wildlife Service. This statement also confused this point, but we should have caught the mistake instead of repeating it.

The reference to the destruction of wetland habitat is fair, in our opinion. Although it might not be technically correct down to the exact acre, we feel it's a very good estimate.

Your criticism of specific wording is, of course, personal judgment. We obviously thought it was appropriate. We also stick by our assertion that wildlife will be impacted far beyond those actually in the pipe line's right-of-way. When one looks at the materials and energy demanded for this project and the natural resources it will take to meet that demand, it would be myopic to imply that the effect on wildlife would be local. —Ed.

INFORMATION AND A REQUEST

This is not intended as a letter of complaint, but a letter of information and maybe a request.

First the information. On the Robb Creek Cattle Association pastureland this last winter and spring (if we had a spring), we had a large number of elk grazing on our private land for several months. In the Ledford meadows and slopes, 175 head were counted and between 50 and 60 head were counted in the Robb Creek area. They did clean out the feed we left and expected to go back to this year. The

pressure in this area was probably greater this year because of the prolonged winter and record snowfall. Now in the Taylor and Swamp Creek area off Blacktail Creek, there was about the same number, usually 400-450 head. These figures are verified by pictures taken from airplanes and snowmobiles.

Now the request. As you are aware, we in the cattle and sheep business receive considerable criticism for grazing on public land—which we pay for. It could be that those who oppose this grazing do not realize that it is closely controlled by the Forest Service (FS) and the Bureau of Land Management (BLM). We leave from 50-75% total forage on FS and BLM grounds so that plenty of feed remains for wildlife. Is there some way the public could be made aware of the fact that this situation is not all one-sided? Is there some way they could be informed that wild animals must graze on private land during certain times of the year to survive?

Please don't misunderstand. We are not looking for praise but we would like the public to know the facts in hope it might broaden their understanding.

Some areas in Montana grow an abundance of grass. The only way this crop can be harvested for human consumption is for cattle, sheep and wildlife to convert it into meat (protein) for our use. A crop not harvested is a waste.—*John Spinner, president, Robb Creek Cattle Association; Sheridan, Mont.*

LESS BITE FOR YOUR WALLET

I noticed two items in your May/June 1975 magazine that deserve your consideration.

First, your book reviews section covers expensive books. Their price prohibits and/or inhibits their wide distribution to the general, rural Montana public. This space utilized in your good magazine to focus reader attention on worth-while books keyed to conservation issues does not pay its way. It might get reader attention—as it got mine—but few will buy those books and get their message even if they can find a retailer who sells them. Libraries have too few copies. The book review section concept, the page layout, most of the writing, etc. are great, but the selection of books just misses the mark.

Second, the suggested references portion of the mushroom article also presents certain difficulties. Anybody who would take "several along for cross reference in the field" has to be in the bucks because all of those books are expensive: "The Savory Wild Mushroom," \$8.95, \$5.95 in paperback; "The Mushroom Hunter's Field Guide," \$9.95; "Mushrooms of North America," \$15; "A Guide to Mushrooms and Toadstools," \$7.95; "Mushrooms of the World," \$12.95; "Mushrooms and Toadstools in Color,"

\$5.95, and "The Complete Book of Mushrooms," \$14.95. I have a special quarrel with "Guide to Common Mushrooms of British Columbia" because neither my sources nor the Lincoln County Library could locate it or its price. How is a reader going to come across this book for reference? Must he/she acquire it in Canada?

If you recommend taking a book into the field, please include some books at the other end of the price spectrum. Here are some of good quality at a reasonable price: "Mushroom Pocket Field Guide," by Bigelow, \$3.50, MacMillan; "Twenty Common Mushrooms," by George Coffin and Margaret Lewis, 95 cents, Branden; "Mushroom Handbook," by Louis C. Krieger, introduction by R. L. Shaffer, illustrated, \$3.95, Dover; "Common Edible Mushrooms," by Clyde M. Christensen, illustrated, \$2.95, University of Minnesota Press.

Please do not receive these suggestions as merely negative criticism. People read your magazine and come to dealers like me to get books that you recommend or refer to them. I would like to serve them, but would rather serve up meatier material with less bite in the wallet.—*Aaron R. Spurway, The Book Cabinet; Libby, Mont.*

•"The National Union Catalogue 1963-67," Vol. 4 lists "Guide to Common Mushrooms of British Columbia" by R. J. Bandoni and A. F. Szczawinski. It was printed in 1964 by A. Sutton, Printer to the Queen; Victoria, British Columbia. The information in the book was apparently duplicated by the British Columbia Provincial Museum in Handbook 24. No prices were listed.—Ed.



Doc Espelin's "The Truth About Snakebite" (*Montana Outdoors*, July/August 1975), must surely be making your readers absolutely and completely terrified. I must admit I have become a bit squeasy myself.

To sum it all up—there ain't no prevention 'cept avoidance of the snake. I've been down here in the desert for some odd 20 years and I think I've seen 2, 1 at the San Diego Zoo and another at the Arizona/Sonora Desert Museum by Tucson.

I think, however, should I ever encounter one of them varmints, I'd faint dead away and he'd be all over me like bees on honey. Then what? No siree, there ain't but one way to beat that rattler rap. Move to—what'd he say—Maine, where there ain't none o' them critters. Seems like a high price to pay but that ol' boy just scared the livin' bejeebers outa lots o' folks, 'cludin' me. And, also, how come a guy needs a prescription for the antivenin? A guy's gotta get bit, then get a prescription?—*Desert John; Goldfield, Nev.*

THEY HAVE A PURPOSE

I enjoy *Montana Outdoors* and wait for each issue. I am very concerned about the wild animals in our country and I believe spots or places should be kept for them so they can enjoy their natural habitat as the good Lord intended.

They have a purpose on this earth the same as you and I and they should not be killed or disposed of to make room for humans.

We have a summer cabin on the Gallatin about 40 miles out of Bozeman. We enjoy all the wildlife. Last spring a small bear put its paw prints on our window sill. I suppose it was trying to look in. I left them there until the fall rains washed them away.

I can understand people wanting to hunt elk, deer, moose, antelope and sheep for meat, but who would want to eat a bear? After one sees a beautiful red fox sunning itself along a mountain stream, I would think he would hesitate in shooting it just for the sport of hearing a big gun go off.

I hope some sort of control can be effected so that both humans and wildlife can live and enjoy the world.—*Mrs. James D. Kelsey; Akeley, Minn.*

HAND IN HAND

After two issues of your magazine, I can say that I am very impressed with the content and philosophy of *Montana Outdoors*. The editors and staff seem to realize that hunting and conservation can and should go hand in hand. Being "pro" one doesn't mean being "anti" the other.—*Michael Ruhkala; St. Ignatius, Mont.*

POLICY ON LETTERS

We welcome comments from readers. However, we will, at times, be forced to cut down lengthy letters because of space limitations. We appreciate hearing from you, but if you want us to print your letter, please keep it brief. The opinions expressed in the "dear F&G" section do not necessarily reflect those of the Montana Department of Fish and Game. They represent the author's views only.



Boy Scouts enjoying the 1975 summer camp on Melita Island—their last. photo by Dennis Jones

MELITA ISLAND — headed for its last camp

by Bill Schneider

Wes Woodgerd, director of the Montana Department of Fish and Game, once told a developer that he fully understood that the subdivision in question—or any other *single* development—wouldn't wipe out wildlife. Each development takes *only* a dozen elk, a few miles of trout stream, some nesting sites or a few grizzly bears, he acknowledged. "But inch by inch, this is eating us up."

We've repeatedly used this quote because it so appropriately explains the plight of wildlife in Montana. The slow and often evasive encroachment onto prime wildlife lands will—when all the developments are added up—rob Montanans of their

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rich wildlife heritage. Recently, this came home to us again, as wildlife lost another "inch."

This summer, the Knights Templar, the Christian branch of the Masonry, sold Melita Island, which lies 12 miles north of Polson in Flathead Lake, to land developers. One of the buyers, Keith Johnson, a Polson banker, told MO that the island would definitely be split up into homesites. However, Johnson denied rumors that the island would be used for commercial facilities.

The Knights Templar purchased the island in 1926 from the federal government, according to Ernest

Murray, Missoula, spokesman for the organization. Murray wouldn't say what they paid for the 39-acre island, although he confirmed that "it was cheap." After owning the island for 49 years, the Knights Templar sold it for \$495,000—or \$12,692 per acre.

During that 49 years, mostly Boy Scouts and Canada geese inhabited the island. About 10-20 pair of Canada geese nest on Melita each year. Undoubtedly, residential development will prevent—or at best severely hamper—this nesting in the future. Granted, 20 broods of Canada geese wouldn't markedly reduce the Flathead area goose population. But it's one more "inch." Day by day, the string gets shorter.

Last year, the department criticized a development in East Bay of Flathead Lake, another goose nesting area. The situations are similar. Add these two together and you double the impact. Add other developments and the reduction in goose numbers magnifies quickly.

Melita Island also offers secure nesting for Flathead Lake osprey. According to officials at the University of Montana's Biological Station at Yellow Bay on Flathead Lake's east shore, ospreys nest on the island. After development, these champion fishermen might find new nesting sites. But, on the other hand, they might not.

The island also supports a few deer, an occasional bald eagle and a myriad of smaller birds and mammals. Some of the smaller birds and mammals may remain after subdivision.

Wilbur Aikin of the Montana Department of Health and Environmental Sciences has considerable experience in water quality and sanitation problems. He suspects that upcoming subdivision on Melita Island could lower water quality in Flathead Lake. Aikin believes the developer can construct a sewage system that won't pollute the lake—"but it will be expensive."

For the past 35 years, the Boy Scouts of America have used the island for six weeks for a statewide

camp. But 1975 was their last camp, according to Robert Hanawalt, Great Falls, who heads scouting activities in Montana. In a letter to Hanawalt, the Knights Templar confirmed rumors that the Scouts would soon be looking for another campsite.

"There is a feeling among some Knights Templar that Melita Island is too valuable a property to be used only about six weeks of the year, and then for a nonrevenue purpose," Murray wrote. "The feeling seems to be building up that the use as a Scout camp is an unnecessary expense on the Knights Templar."

Murray mentioned that his organization contributes to at least two very charitable foundations—one to help persons who are going blind and another that makes loans to students.

Commenting on the sale, Hanawalt noted, "I think it is fair to state that the Boy Scouts of America have used this island *free* for about 35 years. And that we are very grateful for that experience. We wish they hadn't sold it, but it is their island and we recognize their right to do with it what they so choose."

Art Sward, Kalispell, director of camping for the Boy Scouts, summed it up nicely by saying, "I guess they just thought money was more valuable than the island."

With economic pressures pushing from every front, the sale and forthcoming subdivision of Melita Island was probably a foregone conclusion. Land has become so valuable. And people can't tabulate in dollar signs things like osprey nests and unspoiled outdoor experiences for our youth.

It's a classic case of long-term versus short-term gains. In the long run, Melita Island would best serve us—and unborn generations—as a natural, aesthetically attractive classroom for youngsters. As the Scouts who have known Melita mature, they may remember the island, its eagles and goslings. Now, youth unborn will never camp on Melita Island, and in 20 years, very few Montanans will even remember the Scout camp that was. 🐻



Melita Island in Flathead Lake about 12 miles north of Polson. photo by Dennis Jones

Shovelnose Sturgeon



old Montanan becomes new game fish

by Larry Peterman

F&G photos by Mike Haddix

Fishing in eastern Montana's warm-water prairie streams is something like playing the roulette wheel in Las Vegas—with over 40 species finning away in these murky waters, it's anybody's guess what will bite. Those accustomed to angling for salmonids in cold, clear mountain streams might find it a bit disconcerting to pull in their line and find a toothless, bony plated, primitive looking shovelnose sturgeon attached to the end. Others familiar with the shovelnose consider it a prize fish.

Of the three sturgeon found in Montana, the shovelnose (*Scaphirhynchus platorynchus*) is the smallest and most abundant. The white sturgeon (*Acipenser transmontanus*), by far the largest, lives only in the Kootenai River below Kootenai Falls in northwestern Montana. The generic counterpart of the shovelnose, the pallid sturgeon (*Scaphirhynchus albus*), occurs in the lower Yellowstone and Missouri rivers. This species weighs up to 42 pounds in Montana; however, it is rare and infrequently encountered.

The shovelnose is one of fifty-two fish species native to Montana. Anyone seeking the hackleback, flathead, sand or switchtail sturgeon—as it's more commonly called—must travel to the central or

eastern part of the state and search in the Missouri and Yellowstone River drainages. In the Missouri, the shovelnose is abundant in the main stem below Great Falls and common in most larger tributaries. The Yellowstone River contains shovelnose from the Cartersville Diversion structure at Forsyth downstream to its confluence with the Missouri River. They are found seasonally in the Tongue and Powder Rivers.

PRIMITIVE SURVIVOR

Sturgeon are indeed primitive fish. They descended from an ancient bony species of fish which dominated the late Paleozoic era (480-550 million years ago). Only the sturgeon and paddlefish survived to modern times, remaining little changed from their Cretaceous ancestors.

The shovelnose retains many primitive characteristics lost or modified in other, more advanced fish. Instead of scales, the shovelnose has five rows of bony plates (scutes) which extend from behind the head to the tail or caudal fin. Another primitive characteristic is the shark-like heterocercal tail—meaning the upper lobe of the tail fin is longer than the lower. A portion of the shovelnose's body

extends into the upper lobe of the tail fin. Unlike the bony vertebral backbone found in most modern fishes, the shovelnose possesses a notochord surrounded by cartilage.

It is difficult to mistake the shovelnose for any other fish in Montana, except its close cousin, the pallid sturgeon. The elongated body with its five rows of bony plates and the heterocercal tail provide easy identification. In addition, young shovelnose possess a long filament on the upper lobe of the tail fin. However, this filament is frequently absent or quite short in adults.

Body color varies from pale olive or yellowish brown to brownish gray, with the underside usually white. The pallid sturgeon's body is similar but paler, usually white or blue-gray.

The shovelnose probably received its name because the front portion of its shovelnose head is flattened horizontally, producing a shovel-like appearance. The toothless mouth on the underside of the head resembles and functions like a vacuum cleaner hose—the sturgeon extends it when feeding and retracts it when not in use.

A transverse row of four barbels on the underside of the snout just in front of the mouth is another means of identification. On the shovelnose, these barbels lie in a straight line; on the pallid, the outer barbels are behind the inner barbels and form a crescent-shaped line. The barbels are important sensory organs for sturgeon.

FEEDING HABITS

The shovelnose sturgeon feeds primarily on the bottom, with various kinds of aquatic insects its favorite fare. Some studies indicate the shovelnose occasionally feeds or grazes at intermediate depths on small, microscopic, plankton organisms.

The barbels play an important part in feeding. As the sturgeon moves slowly along the bottom, the barbels search out food. When the barbels contact or sense food organisms, the shovelnose extends its mouth and sucks in the food and other debris on the bottom. Most of the debris filters out through the



A shovelnose sturgeon captured during the fisheries study in eastern Montana.

gills and the food passes to the stomach where it is ground and digested.

Since aquatic insects are small in relation to the shovelnose's size, feeding requires a great deal of time. This fish is close to the bottom of the food chain, because it converts aquatic insect tissue directly into fish flesh rather than eating the insects after they've already provided dinner for an intermediate organism or "middle man" such as a forage fish.

SHOVELNOSE ANGLING

Many anglers in eastern Montana consider the shovelnose a prize. The 1975 legislative session added shovelnose sturgeon to Montana's game fish list, but seasons and bag limits have not yet been set. Leo Chapel holds the state record for shovelnose at 8 pounds, 12 ounces. He caught the fish from the Missouri River above Fort Peck Reservoir in 1974. Larger shovelnose are available for the taking—recent Department of Fish and Game sampling in the lower Tongue and Yellowstone rivers near Miles City revealed many shovelnose over 8 pounds and several in the 12- to 15-pound category.

While shovelnose can be caught in the Yellowstone from Forsyth downstream to its mouth, more popular angling spots include (1) that area of the river near the mouths of the Tongue and Powder rivers and (2) below Intake Diversion near Glendive. Major tributaries to the lower Yellowstone—including the Tongue River from the T and Y Diversion Dam downstream to the mouth (about 20 miles) and the Powder River from its mouth upstream at least as far as Broadus—also offer choice angling.

Missouri River fishermen seek the shovelnose from Loma downstream to Fort Peck Reservoir and below Fort Peck Dam in the tailrace waters. The lower Marias River also offers an occasional shovelnose for the creel.

The best fishing comes in late spring and early summer when the fish actively move to spawning areas and bite readily. The biggest catches and largest fish are reported in May, June and July, when prairie streams are high and muddy during spring run-off. Incidentally, this is the only time when shovelnose occur in the Tongue and Powder rivers—sturgeon from the Yellowstone have probably migrated into the tributaries during high water to spawn.

Most anglers fish for shovelnose with rod and reel; however, many are also caught on set lines. Casting, spin-casting and spinning/rod and reel combinations all work well. But don't use your seven-foot Orvis split bamboo dry fly rod for shovelnose angling.

Worms are generally the most effective bait. Occasionally, cut bait and certain odorous catfish baits will entice the shovelnose. Use a heavy sinker and fish the bait right on the bottom in areas of moderate current. Avoid backwater areas and places with no current.

continued

recycled paper



Research may reveal some important facts about an almost unknown Montana fish.

COOKING TIPS

Now that you've caught a shovelnose, what do you do with it? The first step is to clean it, and cleaning a shovelnose is much like cleaning a channel catfish. (See Ken Walcheck's article in the Sept./Oct. 1975 *Montana Outdoors* for complete instructions.) Since a sturgeon must be skinned rather than scaled, a pair of pliers is a good idea: (1) Make a circular cut through the skin just behind the head and completely around the body. (2) Next, cut the skin from head to tail on the dorsal and ventral surfaces of the fish. Use pliers to pull off the skin. If this doesn't work, use any other method you can think of to get the skin off. (3) Remove the head, entrails, fin and tail. (4) Cut the meat away from the notochord and it's ready for the skillet.

Properly prepared, the shovelnose is an excellent table fish. The flesh can be fried, deep-fried, broiled or barbecued and it's especially tasty smoked. On the Mississippi River, much of the commercial shovelnose catch is smoked and market values rank among the highest for any commercial species in the area. (For some excellent fish recipes, refer to the recent department publication, "After the Catch—The Cooking, or How to Cook Fish, Turtles and Things." Prepared by Al Elser and Faye Ruffatto, the booklet is available from the Region 7 Fish and Game Headquarters, Box 430; Miles City, MT 59301.)

THE FUTURE

What does the future hold for the shovelnose? Will

population figures for one of Montana's oldest "natives" remain stable or decline, as they have in other parts of its range? The answers depend on the type and extent of man's activities on the Yellowstone and Missouri River systems.

Construction of dams which impound vast acreages of water disastrously affect resident shovelnose populations in the inundated areas. Since shovelnose require moving water, any dam creating a large reservoir behind it destroys their habitat by creating a lentic (still water) environment and eliminating a lotic (moving water) environment. High Cow Creek Dam, proposed on the free-flowing portions of the Missouri River (prime shovelnose habitat), poses such a threat.

Diversions across streams present another problem. Shovelnose generally migrate upstream to spawn and recent evidence indicates that some move into tributary streams to spawn. Cross stream diversions at certain locations may bar upstream migrations of shovelnose to traditional spawning areas.

Little is known about the requirements of the shovelnose, as compared to more popular fish species. Fishery workers studying the lower Yellowstone and its tributaries might unravel some of the mystery surrounding the shovelnose and determine what type of an environment is necessary for its continued existence. Hopefully, man's activities in eastern Montana will be compatible with the shovelnose, as well as other fish and wildlife species. 🐟

HISTORIC PRESERVATION

by Dave Conklin

With the nation's bicentennial fast approaching, plans have been hastily made for festivals parades, monuments and dedications throughout Montana. However, preservation of the physical remnants of our heritage—the actual significant buildings and sites—may be a more lasting memorial to those who came before us. This is a much slower and more difficult task, but results and rewards increase as years go by.

The impetus for preserving and restoring historic buildings came with passage of the National Historic Preservation Act of 1966. The act protects sites owned by and important to not only the state, but also to local governments and private persons.

The recreation and parks division of the Montana Department

of Fish and Game was given authority by the governor, under the act, to match state, local and private money with federal funds to develop a program for preserving historic sites in Montana. The law also established a "National Register of Historic Places." Each state was required to prepare a historic preservation plan and appoint an advisory council to oversee its efforts. (For more details on the philosophy and objectives of the program, see *Montana Outdoors*, March/April 1971.)

The "National Register of Historic Places" is a file specifying areas of national, state and local significance in the nation's history. The areas are in a file maintained in the National Archives, Washington, D. C. The

areas (defined as sites, districts, buildings, structures or objects) are usually nominated for the register by federal agencies if they occupy federal lands, and by the department's recreation and parks division at the request of a private owner or other public agency. The administrator of the division (officially designated as the state's historic preservation officer) must either approve or disapprove each nomination submitted to the national register from Montana.

Presently, over 60 Montana sites in several different classifications are listed on the national register. The first classification includes national historic landmarks. These are sites of national importance to the country's heritage designated by the Secretary of the Interior, regardless of land

continued



Madison Buffalo Jump near Three Forks, Mont. F&G photo by Dick Ellis

ownership. Pompey's Pillar and Three Forks of the Missouri are two examples.

Another group includes sites that the National Park Service (NPS) administers. These are usually nationally important and include Custer Battlefield National Monument and the Grant-Kohrs Ranch.

The broadest class of sites is historic places. They include national, state or local sites owned by public or private interests. Historic places are usually nominated to the register by the state historic preservation officer with approval of the state advisory council. Examples in Montana include Beaverhead Rock, the Madison Buffalo Jump, Helena and Fort Benton.

Inclusion on the national register does not always guarantee preservation of a site. Two significant benefits are realized, however. First, any project financed or licensed by a federal agency that affects a national register property must be reviewed so that adverse effects can be minimized or eliminated. This law does not offer protection from effects of other public or private projects and no law exists to actually halt a federal project for consideration of its effects. Second, national register sites are eligible for federal money for preservation and restoration on a dollar-for-dollar matching basis. Presently, only limited funds are available from the NPS for these grants. Montana law requires that federal money can be spent *only* on sites in some form of public ownership.

The location and a brief description of each national register site in Montana appear in the Department of Highway's travel brochure, "Montana—Last of the Big Time Splendors."

PRESERVATION EFFORTS

Administering these sites with various ownerships requires close cooperation with the Montana Historical Society to insure accuracy of the historical record of each site before and after actual

nomination to the register. Much time is spent reviewing federal and state agency environmental impact statements and project proposals to determine their effects on existing and potential sites. And, conflicts are bound to arise. One unresolved conflict is preservation of the many historic buildings in downtown Helena and other urban areas in the face of major redevelopment projects.

The recreation and parks division is assisting the cities of Fort Benton, Helena and others to obtain federal money to restore many historic buildings. Several projects recently completed serve as outstanding examples of the elegance which restored buildings add to urban areas. For example, St. Paul's Episcopal Church and the I. G. Baker home in Fort Benton have been restored to the period of steamboat trade. The Pierre Wibaux house and office in Wibaux commemorate a huge cattle ranch of the late 1880s. The historic Madison County Courthouse in Virginia City was restored to its former grandeur following a disastrous fire.

These are a few of the over 50 preservation projects financed and completed through coordination of federal, state, local and private interests. Many of these projects are financed in part by donated property and materials, volunteer work and loaned equipment, thus making historic preservation a community activity. Also, the preservation work is photographed and carefully recorded, enabling future generations to duplicate techniques and materials as need arises. This material then becomes part of the state's archives.

PRESERVATION PLANNING

Beside coordinating these activities and directly administering a number of state monuments such as Bannack and the Missouri River Headwaters, the division also must develop and update the "Montana Historic Preservation Plan." First published in 1970, it is updated annually in July. It contains three volumes:

(1) a historical background of the preservation effort in Montana which is updated when necessary.

(2) a statewide inventory of historic sites amended annually as the historic significance of new sites is documented. The present inventory lists nearly 3,000 historic sites in Montana. Next year's edition may well include over 4,000 as inventories on federal lands are completed. This volume also contains appendices listing legislation affecting historic preservation in Montana, names of museums and historically oriented organizations across the state and a glossary of terms used in historic preservation.

(3) the state's annual preservation program, printed annually under separate cover. This volume contains a detailed account by the division of historic preservation and inventory projects scheduled for the current year and estimated cost of each. Some projects, such as restoration of historic buildings at Bannack State Monument, are carried out directly by the division. Others, such as restoration of buildings in historic districts such as Helena and Fort Benton, will be carried out by private or local organizations, depending on who owns the buildings.

THE STATE ANTIQUITIES ACT

Other historic preservation activities charged to the division include (1) interpreting many of the historic sites along the Missouri River and (2) administering the State Antiquities Act passed by the state legislature in 1974.

The act could become a significant force in preserving some of the historical remnants of Montana's past. Under it, all registered state historic sites are protected by law from damage or destruction with a maximum \$1,000 fine and 6 months imprisonment. The national register does not provide any such penalties for destruction. But in reality, actual protection for state historic sites relies on cooperation and

assistance of nearby residents and their attitudes toward historic preservation. Penalty signs and enforcement efforts cannot save a historic site if the people do not care.

A historic site may be added to the state historical register in two ways. If the historic site occupies land administered by a state or federal agency or a private owner, the department is authorized to sign an agreement with the owner to designate the site and bring it under the law's protection. If the historic site is located on state school or forest lands, then the State Board of Land Commissioners is authorized to designate the site on the department's recommendation.

The state register program relies entirely on the willingness of owners of historic sites to apply

for protection under the law. Individual citizens, either as owners of historic sites or as an influence on owners, can significantly affect success of the State Antiquities Act.

Most of the department's budget comes from the sale of hunting and fishing licenses. However, funding for the historic preservation program comes from general tax revenues and is apportioned by the legislature. Any money spent for planning, inventory or a preservation project is also matched with federal money. Presently, state and federal money can be spent only on publicly owned sites within the state.

Much can be done to save a small part of Montana heritage for future generations, but it will take (1) additional funds for preservation and restoration, (2) a historic

preservation plan to identify sites and provide guidance, (3) a professional advisory council to assist in proper preservation and restoration and (4) concerned and cooperative people—both private citizens and also public agencies.

In Montana, the historic past is a recent era, and throughout the state the remnants are abundant. Much of the state's history, a time of slower moving events and gradual change, is within the memory of many.

But the pace has quickened. Ahead lies a period of accelerated change with the past receding even more swiftly. At this stage in history—while the past still lingers within our grasp—lies an opportunity to deepen our understanding of history and to preserve this knowledge for the benefit of future generations. ■

contributors

Mitigation can't replace destroyed natural resources with something of equal or comparable value. That's the conclusion reached by Bruce May in his article, "The Mitigation Myth," on page 6. Impounding a free-flowing river usually means replacing a quality, wild trout fishery with a sport fishery managed mostly with hatchery fish. And that's what has happened at Libby Dam, on the Kootenai River in northwestern Montana. For over six years, the author has worked on projects to evaluate the effects of Libby Dam on the fishery and to develop management programs for Lake Kootenai and related water. He holds a B.S. degree in zoology and a M.S. in aquatic and fishery biology, both from Ohio State University. He is a fish management biologist for the department, headquartered in Libby.

Jon Cates' camera has beautifully captured the shadows, fading light and autumn colors familiar to anyone who has taken to the woods when hunting season beckons. A free-lance writer and photographer, Cates ranches near Missoula, Mont. His photo feature, with text from Aldo Leopold's "A Sand County Almanac," begins on page 20. Cates' address is: Route 2; Missoula, MT 59801.

What possible effect could a coal reserve in Canada have on Montana? Mike Aderhold's answer is, "plenty." The 21,000-acre coal reserve straddles the west branch of the East Poplar River—which originates in Canada but flows into Montana. The reserve will

probably spawn a coal-fired power facility, complete with cooling pond and associated problems of dewatering. The project leaves several big questions unanswered—such as where the suspended particulates, sulphur dioxide and oxides of nitrogen will come down. They have to come down somewhere and with prevailing northwestern and sometimes southeastern winds, much of that "somewhere" will be in Montana. Aderhold is the department's information officer in Glasgow. He holds a B.S. in zoology from the University of Michigan and a M.S. in wildlife management from the University of Montana. Turn to his article on page 17.

The shovelnose sturgeon is one of fifty-two fish species native to Montana. Found only in the Missouri and Yellowstone drainages, it descended from an ancient, bony species of fish which flourished 480-550 million years ago. Remaining little changed from its ancestors, the shovelnose possesses five rows of bony plates instead of scales, and a shark-like tail. The front portion of its head is horizontally flattened, giving it a shovel-like appearance and probably contributing to its name. Larry Peterman, aquatic project leader for the department's Yellowstone River study, also gives angling and cooking tips and makes a prediction about the shovelnose's future. Peterman has a B.S. in biology from Wisconsin State University and a M.S. in fish and wildlife management from Montana State University.

Montana's historic past is relatively recent and the remnants of its rough and tumble romance are evident throughout the state. But the pace of

living has quickened and the past recedes ever more quickly. Dave Conklin urges both private citizens and public agencies to preserve that past and at the same time deepen our understanding of history and preserve this knowledge for the benefit of future generations. Preserving the physical remnants of our heritage—the actual significant buildings and sites—may be the most appropriate memorial to those who came before us. His article on the department's historic preservation project begins on page 35. Conklin, historic sites management officer for the recreation and parks division, received his B.S. in forestry from the University of Idaho and a M.S. in wilderness recreation management from UM.

We're especially pleased to reprint Robert E. LeResche's address, "Toward a Common Goal—the Social and Ethical Considerations of Hunting." His original remarks were delivered to the 38th Annual Meeting of the National Wildlife Federation in Denver, in March 1975. Widely reprinted and quoted in both magazines and newspapers, LeResche urges hunters, anti-hunters and wildlife managers to work on what they have in common, rather than emphasizing their differences. He is presently planning coordinator for the game division, Alaska Department of Fish and Game. He has worked on research projects involving caribou, moose and penguins. He holds a B.A. in English from Dartmouth College, a M.S. in wildlife management from the University of Alaska and a Ph.D. in pathobiology-ecology from Johns Hopkins University in Baltimore.





photo by Bill McRoe

Toward A Common Goal

the social and ethical
considerations of hunting

by Robert E. LeResche

The crux of many emerging issues lies in the social side of conservation. The emphasis should not be how to "achieve and maintain variety and optimum numbers of wildlife," but rather how to "achieve and maintain variety and optimum levels of human experiences with wildlife."

Three groups seem continually determined to argue with one another but their objectives are, in fact, close to identical: hunters, those who would abolish hunting and wildlife managers. While these groups debate and in-fight over what constitutes proper use of wildlife resources, others continue the blind march of ecological suicide that must one day eliminate any choice in the matter of variety and numbers of wildlife.

Hopefully, discussing the social constraints and ethical burdens of hunters, anti-hunters and wildlife managers will contribute toward a realization of a common goal and a common enemy. The common goal is perpetuation of a variety of human expression in what is left of the natural world, and the common enemy is those who would destroy this natural world and thereby eliminate a priceless potential for human experience.

THE HUNTER

By now it is aphorism that the hunter is an endangered "species," and that social and ethical concerns of nonhunters are the basis for his precarious position. Despite the philosophical impossibility of debating "taste" or personal ethics, the hunter's actions are suddenly socially unacceptable. His public image is low and declining, and he is worried and perplexed. Recent essays have explored anti-hunting sentiments and have clarified how

continued

•The following article has been adapted from an address given by Robert E. LeResche to the 38th Annual Meeting of the National Wildlife Federation in Denver, March 1975.—Ed.

others see hunters. Arguments against hunting have recurrent themes, but can be divided roughly into three categories: the "cruelty argument" the "uncivilized argument" and the "ecological argument." The first two can only be answered by personal opinion—for that is all they are themselves. There is some rational basis for the third. It is very important that hunters take each of these seriously, however, for there are millions of people—people who vote and thereby control America's public land—who sincerely feel them. Hunters have ridiculed and laughed them off too long.

The cruelty argument is straightforward—killing is cruel. Wild animals are happy and innocent until man comes on the scene with his roaring machines, traps and big guns. The animals he kills suffer, their bereaved friends and relatives mourn their loss. Their offspring are left to starve. The answer, hunters say, is simple—ridiculous. Don't put man's feelings onto animals. They have no emotions. But as one tries to develop this counterargument the real truth becomes plain: There is no proof of either side and "their" ideas are as true to them as the hunter's are to him.

The uncivilized argument is more insidious and a little less fair, because it attacks the hunter rather than the act of hunting itself. Hunters are culturally immature—throwbacks to the caves or at least to the Dark Ages. Or, worse yet, they are sexually inadequate and their guns are merely extensions of Freud's cigar. In short, hunting is below contemporary human dignity and hunters are unfit for today's society.

Counterarguments are many and fascinating. Man evolved a hunter, still retains the trait and a healthy human personality accepts, rather than represses, its true nature. Hunting is a better outlet for man's inherent aggressiveness than is war. Or, simply a direct reversal—a natural human being can be defined as one who hunts.

The ecological argument maintains that hunting endangers the ecological balance and may lead to extinctions. Look at the passenger pigeon, the bison and great auk. Many more moose and grizzlies are visible in McKinley Park than in other parts of Alaska, where hunting is allowed. The walrus, seals and polar bear were almost extinct before they were saved with the Marine Mammals Protection Act. Lucky we forced the Fish and Game to close that doe deer hunt—they'd have killed off all the deer. They are all the same argument.

These criticisms sometimes are at least rational, though often based on misinformation. In some cases they may even hold merit. Since modern game management practices have been in effect, no species in North America has been severely depleted by legal sport hunting and many have benefited tremendously. Sport hunters have been the single strongest factor in preserving all kinds of wildlife and wildlands over the last few decades and in financing the work that has taught us about wildlife ecology.

But hunters must also admit that the advent of the aircraft, the ATV and the snow machine—without a simultaneous development of a new ethic for their use—has resulted in problems and made proper management and preservation a struggle, at best. Indiscriminate shooting, crippling losses and illegal or unreported kills and harassment of game by hunters probably have, in fact, affected some populations and redistributed others. In today's world, arguments about the ecological necessity of hunting are absurd. To save hunting, hunters will have to admit these things and do something about them—fast.

One theme recurs throughout the anti-hunting argument: The hunter is a slob who thinks only of killing. He has no respect for the rights of other humans or other animals.

It has been said that "America is the only nation that has gone from barbarism to decadence without creating a civilization in between." Does that not all-too-truly describe the development of our hunting culture in this country? The days of nonregulated market hunting may have merely faded into the days of mechanized no sweat, kill 'em and take 'em home hunting. It is hard to discern any culture or set of ethics that developed in between. It is there, somewhere, but it is difficult for a nonhunter to see. Stating a civilized set of ethics loud and clear—by deed much more than by words—is the only salvation for the sport of hunting. Psychologists say, "People don't like what they fear, and they fear what they do not understand." So what we are talking about is education. Maybe so, but what we're *not* talking about is a news release saying "The National Wildlife Federation explained today that they have ethics and love animals." In the real world, the quickest way to alienate someone is to give him a lucid, hard-hitting rational explanation he never asked for.

How are people educated to believe in hunting, then? The best way is educating them to believe in *hunters*. Specific suggestions include:

(1) The hunter should sit down alone with himself sometime soon and decide what are his own personal ethics regarding hunting and conservation. That question is difficult to answer, but the answer will come. Then the hunter must *consciously* stick to these ethics, whether in a crowd or in the wilderness 100 miles from the nearest human. How many hunters have—just once—chased an animal with a snow machine? Hazed one with an aircraft? Failed to kill cleanly and humanely? Left just a bit of edible meat in the field? Hunted a species they knew little about? Forgotten for a moment that hunting is much more than killing something and getting home fast? Ethics have a way of eroding very quickly at the tiniest breach.

Once a hunter knows his principles and follows them himself, he should talk about them. He shouldn't ignore acts by other "hunters" that are wrong in his eyes. The hunter can't make that fellow

who just shot from the road share his ethics, but he *can* let the other fellow know his behavior is offensive. Hunters must have opinions—anti-hunters certainly do.

(2) Hunters shouldn't be defensive about hunting. They shouldn't say, "It isn't any worse than letting animals starve," or "Game can take it." Hunting is not merely the lesser of two evils. With pride in his principles, the fact he follows them without exception, and with biological knowledge, the hunter need not be ashamed of hunting. In fact, if he is ashamed of it, why does he do it?

As a corollary, a hunter must never get into a position where he defends *all* hunting. He should admit there *are* some slobs who hunt (there are also slobs who belong to anti-hunting groups) and make it plain he disapproves of them as much as anyone does. Many practices lumped in the public's mind under "sport hunting" *are* despicable.

(3) The hunter must accept the fact that anti-hunters are sincere, that many people are actually sickened by the sight or even the thought of a dead wild animal. They don't deserve to be written off as "kooks" any more than do hunters. So hunters should have some concern for the sensibilities of others, taking them seriously and trying to understand them. Practically translated, the hunter should ask himself what he gains by leaving a gut pile in view of the road, by tying a bloody deer carcass on the hood of his car, by carrying an easy rider gun rack full of loaded firearms in plain view in his pickup? These antics are nothing less than gross disrespect for the sincere feelings of others.

(4) The hunter should acknowledge that other legitimate uses of wildlife exist beside hunting, and support these uses where appropriate. He should never forget that wildlife belongs to all the people, not just to hunters. He should be as sure that viewing areas and study areas are established, as he is sure that hunting is preserved. No one who really understands the natural world is against hunting, and the more chances provided for people to learn about ecology, the better. So the hunter should support a suitable number of closed areas, walk-in areas and parks, where other important uses might be severely degraded by hunting. (Hunters often think hunting is always incompatible with nonconsumptive uses. With proper management and seasonal zoning, they are compatible in a vast majority of cases.)

(5) Hunters should become naturalists and learn all they can about wildlife and ecology. It will enhance the pleasure they derive from hunting. It can do nothing but improve the average hunter's image when he can intelligently talk about "healthy ecosystems" instead of "more shootable game," and when he knows as much about the fantastic migrations of the Arctic tern as he does about the relative merits of a lung shot and a shoulder shot.

By trying some of these things, a hunter may even respect hunting more himself. He'll certainly earn

the respect of nonhunters, and maybe even of an anti-hunter or two.

THE ANTI-HUNTER

The anti-hunter is a new phenomenon, new in American history and new in the evolutionary history of mankind. According to studies, he tends to be more educated, more wealthy and more urban, and includes a higher proportion of women than do hunters. He has been very successful, in an increasingly urbanized environment, in achieving his goals over the past several years. He has made important contributions to the welfare of rare and endangered species and has forced the hunter to re-examine his behavior. He has often inserted humanity where only demography previously ruled.

Anti-hunters are in danger of losing what they are striving to protect. Extremism has a way of catching up in the fickle public arena. Flushed with success, anti-hunters have often become unreasonable and oppressive and have forgotten human social rights and ethical constraints in their rush to protect the rights of other animals.

At the worst, they are blindly intent on eliminating an important aspect of human diversity and foreclosing any future for an important and long-satisfying human experience. They would prohibit something culturally and genetically based, an emotional fulfillment to many. They would prohibit something ecologically sound, around which most ecosystems have evolved. They would, in the special case of the North, destroy a multitude of cultures and force hundreds of thousands of human beings living within the natural world of renewable resources into "cash economies." The life styles into which these people would be forced are incredibly profligate in use of energy and nonrenewable resources and could ultimately result in destruction of our last great wildlands.

Most important, by focusing their considerable energies against fellow conservationists—hunters who share their perception of man's relationship to nature—anti-hunters give free rein to others who don't give a damn whether wildlife survives another day. As Dr. Raymond Dasmann put it: "The nature lover who can weep over baby whales while turning a blind eye to other marine utilization schemes that would destroy the food supply of all whales, certainly lacks understanding. Those who would protect all animals from hunters, but leave them to starve on a depleted habitat, have some strange kink in their humanitarianism. Those who would eat meat, but oppose all killing of animals, live at best in a peculiarly sheltered world." By misdirecting their efforts against those who in reality share their most basic concerns, anti-hunters *are* in danger of losing it all.

As thoughtful conservationists, anti-hunters should consider several suggestions before expending their energies to fight against all hunting:

(1) They should learn more about ecology—that the real danger to ecosystems is not limited killing of

continued



Through contributions of time and money, sportsmen have encouraged the conservation and sound management of elk and many other wild animals. However, anti-hunters are reluctant to accept this fact. F&G photo by Eldon Smith

consumer species, but rather wholesale destruction of substrate and producing species and injection of pollutants. Anti-hunters must learn the principles of compensation. Once an ecosystem is altered by man (and few remain unaltered), further manipulation is often necessary to preserve it. And they should know more of the "natural" lives of wild animals and the conditions they have evolved to cope with. By understanding these things, anti-hunters will have a much deeper love of natural things than they have now, and will be able to relate to them more than they ever dreamed. Love based on knowledge transcends any emotional attachment based on fantasy and misinformation.

(2) Anti-hunters must learn more of human evolution and of man's primordial relationships to natural systems. Man has long been at or near the top of the food chain and he has long been intertwined with many prey species as a predator. Many of man's behavioral and cultural attributes—attributes as basic as family structure—evolved because of his hunting heritage. Hunter-gatherer societies are the least destructive of natural systems and agricultural societies have been responsible for atrocious environmental degradations. Hunting man has always felt the greatest reverence for wild things and has always mourned their disappearance (and strived for their protection) more than has urban man. Most important, true hunting is not an aberration, but an integral part of evolved mankind. The closer man returns to the natural world, the more he returns to hunting.

(3) Anti-hunters need to learn to distinguish between hunters, hooligans and exploiters. The true hunter sincerely enjoys what he does and finds himself fulfilled and brought closer to nature by it. He could no more face a world without wildlife than he could face one without oxygen. He cherishes the

intimacy and respect inherent in the hunter-hunted relationship and understands wild things better than anyone else. He is no more a bloodthirsty "kook" than an anti-hunter is. The true hunter shares the anti-hunter's disgust for those who kill and destroy thoughtlessly, wastefully or cruelly.

(4) Anti-hunters should learn what hunters have done for wildlife. Anti-hunters are a Johnny-come-lately to conservation: The hunter was talking about ecology, pollution and habitat destruction before anti-hunters ever heard the words. Hunters' dollars have paid for the research that has taught us almost all we know about wildlife. Hunters' dollars have paid for preserving millions of acres of land that support millions of wild animals. It is frightening to imagine what would be left of wild systems on the earth had not hunters fought for decades to preserve them when nobody else cared. These are facts which anti-hunters cannot ignore.

(5) Anti-hunters must recognize the fact that subsistence economies will continue to be the most ecologically sane means of support for people living in the North. This support comes at no cost to the ecosystems it derives from and allows the most satisfying life styles left on the earth. To preserve the future opportunity for such life styles is the best way to preserve the last great natural system in North America—and the best way to insure that our children might one day have the opportunity to understand wild things as only the self-sufficient subsistence user can. The alternative is grim: an increased load on our energy/resource wasteful economy, an immense area of "wild" land supporting ecosystems deprived of a natural predator and in turn burdened by thousands of industrial consumption-oriented visitors and another deeply satisfying dimension of human life forever lost.

All these suggestions boil down to this: Anti-hunters owe it to their fellow human beings to consider each case on its merits, to really consider *all* the ramifications of hunting or the abolition of hunting and to never summarily prohibit something they do not understand. Most important, anti-hunters should put their efforts where they will do the most good—toward stopping the developer, the energy salesman, the polluter and their ilk. Anti-hunters shouldn't squander their energy on their closest ally, the hunter.

THE WILDLIFE MANAGER

The professional wildlife manager is caught in the middle of an apocalyptic struggle that will decide the future of the things he believes make life worth living. He is beset on one side by hunters, on another by anti-hunters and from all around by drillers, ditchers, cutters, builders, burners and polluters. He has watched hunting—which likely directed him into his profession in the first place—degenerate into gadgeteering and tarnish because of it. He has welcomed a new “ecological awareness” in the general public in hope that someone finally might understand the multitude of threats to wildlife—and more often has been rewarded only with counter-productive emotion. Most frightening, he has watched industrial society, which took a hundred years merely to sprout, suddenly mushroom into a monster before which nothing is sacred. These things have called for a reassessment of the wildlife manager's values and a redefinition of his goals. If he is ultimately to save wildlife and the human satisfactions natural things provide, he must consider several things:

(1) He must re-examine the entire concept of wildlife management. “Management” is a young concept, with its roots in husbandry and agriculture. Managers have traditionally dealt with the demographic principles of production and mortality and with how many individuals might be taken from a given population and have strived to increase this allowable “take” by manipulation of population structure and habitat. However, the more we learn of natural systems, the more we realize that omnipotent manipulation is seldom, if ever, possible without a significant loss of diversity and stability. More important, the “crop” itself is nearly always far less important than the variety of human experiences the resource can provide. Maximum “production” of experiences requires unmanipulated as well as manipulated communities.

Wildlife managers must recognize that what they are truly managing is a *diversity of human experiences with wildlife*. In many cases this means they are more “people” managers than wildlife managers. Producing game is no longer enough.

(2) Wildlife managers must become less insular in outlook. They no longer work only for hunters, if indeed they ever did. Hunters pay the bills, it is true, but they are not buying the right to kill something. Rather, hunters are supporting programs to preserve

diversity of human interactions (both consumptive and nonconsumptive) with wildlife. Wildlife managers work for the resource, the future and for all who come in contact with the resource, not merely for anyone who buys a firearm or a hunting license and thereby contributes money to wildlife management.

(3) They must stress quality rather than quantity. Hunter days afield is one valid measure of the success of a wildlife manager, but it is only a part of the picture. The nature of the experience hunters undergo is the real basic measure of the product. Managers shouldn't fall into the trap of thinking that without harvesting there is no management—that nonconsumptive use is no use at all. Today's overabundance of potential users and reduced number of wild systems doom any attempt to supply unlimited demands.

(4) They must realize that the wildlife manager manages ecosystems, not deer, cottontails or mallards. His obligation extends to all the nongame creatures which are part and parcel of diverse systems. Without songbirds, insects, reptiles, rodents and all the other animals which are never harvested, the natural world would hold much less fascination for hunters and nonhunters alike.

(5) Game managers should spend more time finding out what today's public wants. Bureaucrats and technocrats tend to dictate and manipulate rather than to ask, and many wildlife managers seem to be serving the public as they imagined it existed ten years ago. Managers have often forced biologically sound “maximum sustained yield management” on a public that really did not want it, stressing the dollars and cents values involved rather than the emotional values left unrealized. If game managers wonder at the adversary relationship that has developed between them and both hunters and anti-hunters, they might look here for an explanation.

(6) Game managers should try a little creativity. They must learn about compatible use zoning and about flexible restrictions in time and space. They need to realize some systems can accommodate a multitude of wildlife-related uses if they are properly managed. Each user's experience can be enhanced with education and regulations that transcend traditional thinking. *Laissez faire* in people management is a luxury we can no longer afford, least of all in the lands whose wildness we most want to preserve.

(7) The game manager should help both the hunter and the nonhunter to understand where the true satisfactions of hunting and other interactions with wildlife are. He must not shrink from discussing—even teaching—ethics, concern for wildlife and for other human beings who love wildlife. If he can do this one thing, he will expand the horizons of modern man tremendously, and create a concern that will never allow wild things to be forced from the earth. *This is the function of a wildlife manager.* ■



watercolor by Donita Sexton

Why do you hunt? Have you ever really searched for the answer? At first, it's tempting to blurt out something about enjoying it or because it's lots of fun. But when you start looking deeper, it becomes complex and intangible.

Today, many people oppose hunting. In fact, some would like nothing better than to ban all hunting. We don't experience this because most westerners hunt or accept it as a valid pastime. But anti-hunting sentiment poses a serious national threat to sport hunting.

Pretend you're explaining why you hunt to someone who is

challenging the sport as inhumane, unneeded, barbaric, outdated and, in general, unwanted. Could you convince him that hunting was acceptable?

To help find out why we hunt, we surveyed *Montana Outdoors* subscribers and bluntly asked them, "Why do you hunt?" The survey won't pass scientific guidelines—partly because of the small and biased sample size. But it does give some insight into this all-important issue.

Most respondents (about 62%) mentioned simple enjoyment as one reason. They broke it down into a good opportunity to enjoy nature, getting out in the great outdoors, understanding nature

or a challenging and rewarding experience.

The second most popular reason (34.5%) used by MO readers was "for the meat" and to "help out with the grocery bill." One respondent said, "In my opinion, wild meat is far better tasting than any kind of meat you buy at the store."

The third most common reason (18.8%) was the need to manage game populations by hunting. Many hunters understand that hunting crops surplus animals, keeping populations within the carrying capacity of the available habitat and that license dollars go toward wildlife restoration.

Surprisingly, 16.3% of the respondents said they didn't

hunt. *Montana Outdoors* covers a wide array of outdoor, wildlife and conservation topics. And apparently, this diversity is reflected in the readership. Only a few of these nonhunters badmouthed the sport, however.

Other popular reasons (in order of popularity) were: (1) it's a way of life, a heritage or a right, (2) "a chance to get away from it all"—the pressures of modern civilization, (3) good exercise, (4) good family recreation—"gives me a chance to really enjoy my children," (5) for the trophy and (6) "a good way to see how man has messed up the land."

A few jokesters turned in surveys too, like the man who said he wanted to kill all the deer so the coyotes would starve.

Several persons emphasized that the "kill" was secondary to the "hunt." The primary reasons varied, but the actual physical fact of being out pursuing game and "enjoying nature" appeared paramount. "I don't care if I kill anything," was a frequent comment. "Pulling the trigger is anticlimactic," one subscriber suggested.

Others viewed it as a "therapy" to ease the tensions of their lives. Several said anyone wanting to ban hunting must be a strict vegetarian and should be forced to visit a slaughterhouse.

Trophy hunting was quite unpopular. Only six subscribers listed it as a reason for their sport. Many more emphasized that it "was not the reason" they hunted and some spoke out against trophy hunting.

The "fun" or "enjoyment" justification can, of course, be applied to any form of recreation. But many respondents seemed to enjoy their walks in the woods—"the fringe benefits" or "all the things around you"—more when they were pursuing game. They were searching for game, so they saw other animals, plants, vistas, interesting land forms, etc. and

thus, topped off their trips. "Just look around you," one reader remarked.

A few other comments included:

- "Hunters have done more for the preservation of wildlife than any other group in the country."

- "Hunters are not savages who will kill anything. They are just people like you and me."

- "I would suggest that if someone is against hunting he spend his time on some more worth-while endeavor such as the pollution."

- "Good hunters make good citizens."

- "My grandfather taught my father to hunt, trap and fish. And the two of them took me afield as a very young lad and taught me. Now my grandfather is dead and my father and I are teaching my son. Perhaps someday my son and I will have the pleasure of passing this knowledge on to his sons."

- "It is important to have such basic or primitive outlets for some of us if we are to maintain some semblance of sanity and a sense of reality."

- "All hunters who have tried to bag an experienced old buck or a sharp-eyed goose know."

- "More than once, I've become so involved with watching that I had forgotten to shoot."

- "It's an opportunity for me to teach my children to respect other people's property rights and to teach them all the other habits of good sportsmanship."

- "If [the game] is not harvested soon it will soon outgrow its habitat and disease and starvation will take its toll. It is much better to let hunters take it for food and trophies."

- "I hunt for the quiet of the woods, for the excitement and challenge, for the companionship of good friends, for the pride of success, for the sharing with my wife and children, for the excellent

exercise and to keep the damn meat bill down."

- "I hunt because I've found that close bonds exist between the hunter, the hunted and nature."

- "Our subdivided valley can only support one or two deer anyway."

- "Does your magazine print anything about hunting? All I ever seem to see are some articles against coal mines and electrical companies."

- "The term 'hunt' must be defined to mean more than just wantonly shooting some animals."

- "A good, quick kill affords an animal no suffering."

- "Why do people play football and basketball?"

- "I'm a hunter and proud of it."

- "Joseph Addison [an English poet and essayist] once said, 'The great essentials to happiness in this life are something to do, something to love and something to hope for.'

- "Hunting is something to do. It's sighting in that favorite rifle, reloading ammunition, going over maps of a new hunting area, training a young setter, shopping for a new wool shirt or perhaps a down vest.

- "Hunting is something to love. I love the glow of a campfire, the smell of fresh coffee by the campfire, to see the sun rise over the distant mountains, the high wild places where few men and no vehicles go, and to see deer, elk, quail, rabbits and all wild things.

- "Hunting is something to hope for. It's hoping that your name will be drawn for that special elk or deer hunt, that heavy spring rain hasn't drowned the young crop of quail, that your young setter will eventually hold birds, to see the first tinge of color in the fall leaves, to smell the cool freshness of autumn, to look forward to another hunting season, but most of all, it's hoping that wildlife and wild places will endure forever." 



**THE SOCIAL AND ETHICAL
CONSIDERATIONS OF HUNTING**

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